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E-COMMERCE CANNIBALS 64 VERTICAL PORTALS 96 WAR CRIMES 138

FEBRUARY 15, 2000

EIGHT DOLLARS

# CIO

The Magazine for Information Executives

THE OLD DREAM FACTORY GOES DIGITAL

# IT Boffo in Tinseltown

PAGE 86

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PAGE 70

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PAGE 114

The 99.999 Percent Network Solution
PAGE 104

CIO JUSTIN YAROS
Putting the "biz" in showbiz at 20th Century Fox

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of business no longer apply

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# operating systems

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VitalSuite Portal - Microsoft Internet Explorer

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BUSINESS APPLICATIONS NETWORK ALARMS REPORTS ADMIN

My Vital My Business

Lucent My Vital

Welcome, I

Last update: 14:00, Jan.11, 2000

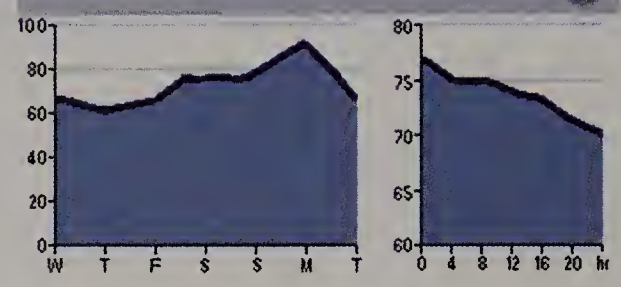
Reported: from Jan.2 to Jan.8, 2000

PERSONALIZE REGENERATE

**My Business Transactions**
TRANSACTION TIME (msecs)

| Name | Application | LAN | Dial up |
|---|---|---|---|
| Update budget | financials | 900 | 1,500 |
| Generate invoice | financials | 760 | 2,700 |
| Configure order | eCommerce | 532 | 3,200 |
| Check inventory | eCommerce | 1,010 | 2,900 |
| Credit authorization | eCommerce | 1,320 | 1,600 |

**LAN Quality Index**



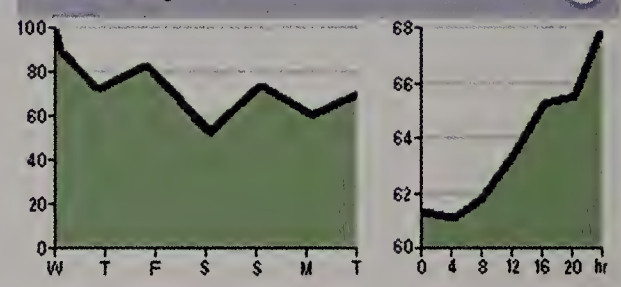

**My Applications and Services**
AVAVAILABILITY

| Application | |
|---|---|
| Order tracking | 9 |
| Customer Billing | 6 |
| B2B Procurement | 5 |
| Online Store | 10 |
| Sales Order Processing | 10 |

**Application Leaders**
AVAILABILITY — DIAL UP

| Application Name | Last week | 2 weeks ago |
|---|---|---|
| SAP | 87.4% | 13.8% |
| PeopleSoft | 68.3% | 2.5% |
| Email | 54.3% | 8.2% |
| Web | 45.2% | 4.3% |
| DNS | 17.8% | 2.7% |

**WAN Quality Index**




**Highest Impact Active Events**
Last update: 14:00, Jan.11, 2000

| Top 10 Problems | Location | Affected Clients |
|---|---|---|
| DNS query failure | 192.6.3.72 | 18 |

**Router Leaders**
PEAK UTILIZ

| Router Name |
|---|
| HQ Campu |
| HQ Campu |
| Seattle Bra |
| New Jerse |
| Atlanta Bra |

View: Last Week

Click.

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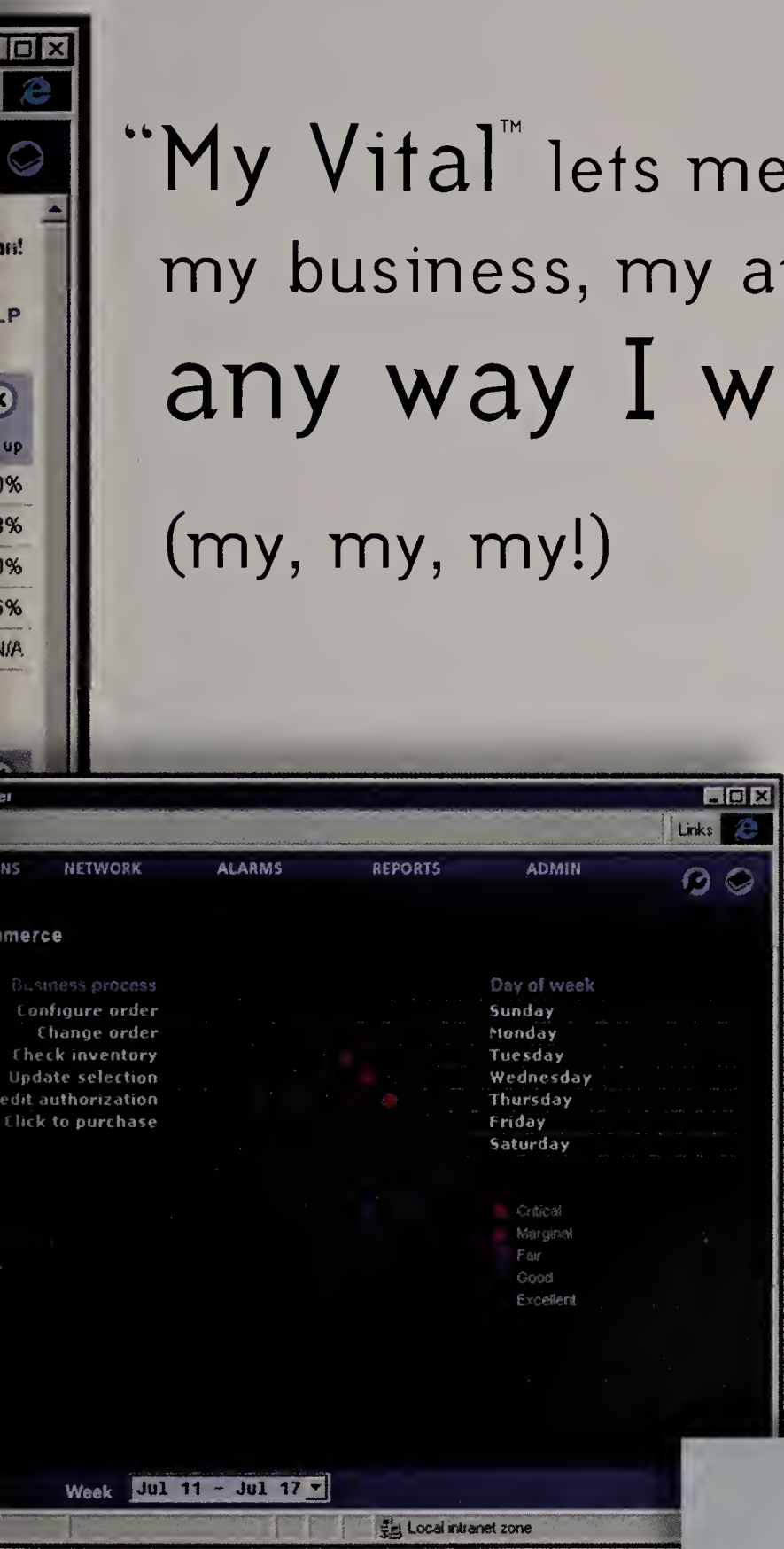


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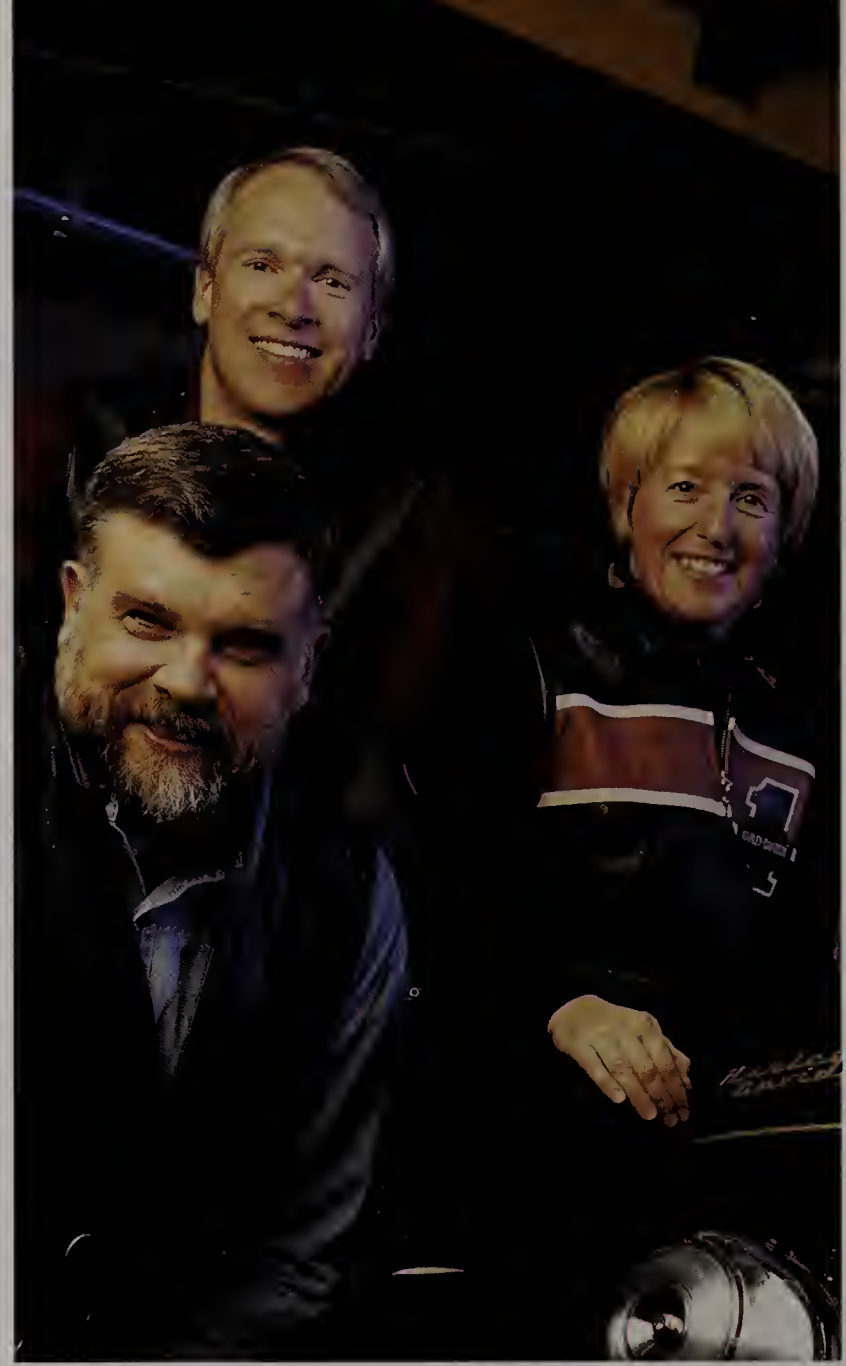

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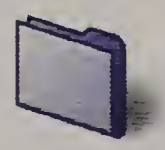

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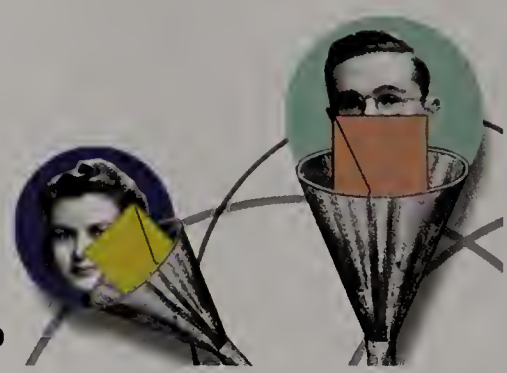

*Even more important than recruiting every propeller-head you can lay your hands on is retaining every propeller-head you've got.*


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# From the Editor

*lundberg@cio.com*

# War Crimes and Cannibals

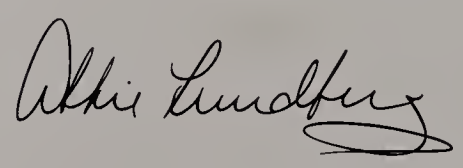
One of the most exciting benefits of having *CIO* in one big package is the flexibility it allows us with our content. In every issue, we not only offer you the directly relevant stories that are our bread and butter, we can also range further afield, as in this month's "Wired for Justice." Features Editor Sandy Kendall reports on how the World Court's International Criminal Tribunal uses information technology to investigate and prosecute crimes against humanity committed in war-ravaged Kosovo (see Page 138). But even when we cover such issues, we make sure there is a clear link to the work of CIOs—in this case, tracking, managing and sharing huge volumes of detailed, extremely sensitive information that must be readily and transparently accessible but absolutely secure.

Want a little free, vicarious consulting? This issue premieres a new incarnation of our Case Files series. Value Proposition examines one company's approach to making IT investment decisions. In this case, Capital Blue Cross uses Concept Exploration to evaluate three approaches to analyzing relational customer usage data. This technique can apply to almost any IT project, whether you're in the insurance industry or not. Analyst Doug Hubbard critiques Capital's approach, pointing out its strengths as well as some areas for improvement. Senior Executive Editor Richard Pastore reports on Page 80.

We've got two great Web Business stories in this issue: a feature on B-to-B electronic marketplaces (variously referred to as e-hubs, e-marketplaces, vertical portals and B-to-B trade communities), by Senior Editor Sari Kalin on Page 96; and a rather scary column by Harvard Business School professor Jeffrey Rayport on how to understand not *if* but *when* your company is likely to get cannibalized by the dotcom competition (See "An Unevenly Distributed Future," Page 64).

The anonymous author of our popular new column CIO Confidential shares his frustration in trying to manage his CEO's expectations around which technology initiatives his company is—and isn't—investing in. See "The Boiler Room Rag," beginning on Page 160.

In the second installment of our series on failed projects ("Another Trip to Hell," by Senior Writer Polly Schneider, Page 70), we explore the reasons for, recovery from (or not) and lessons learned from a variety of IT projects in various industries. We're sure you'll find something to identify with.



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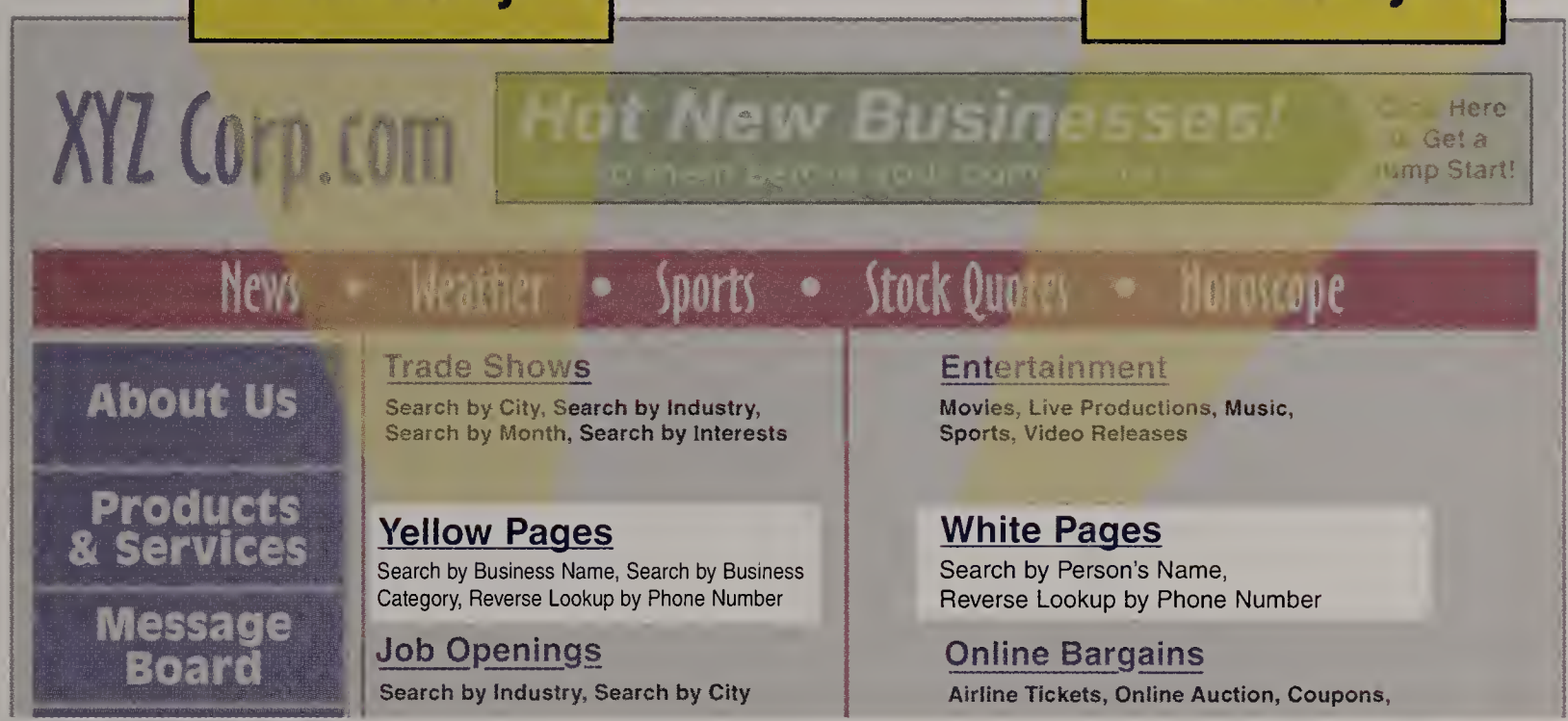


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# InBox

Reader Feedback

## STRIKING A CHORD WITH TECHNO-GEEZERS

**Thank you for your interesting, perceptive article ["The Rise of the Techno-Geezer," *CIO*, Dec. 1, 1999].**

**Being a 50-year-old bit-flipper myself, I heartily agree with your points about mentoring, sidestepping the swarm to "the top of the heap" and realizing what's important, just to name a few. It's always good to have one's long-held beliefs corroborated, and that is just what your article did for me. Interesting assignments, lifelong learning opportunities, time flexibility, geographic neutrality and telecommuting are key elements for a job that I would take in a heartbeat. My search continues.**

**One of the assumptions in your article is that we old codgers want, more than need, to continue to work at our chosen craft. One reason for this, for me at least, is enjoyment. I like to solve the puzzles that my work provides. This stimulation helps keep me young and thus more able to continue doing what I do. It also gives me a bond with those of all ages who like to learn, which helps bridge potential generation gaps.**

John Hampton • *Senior Systems Consultant* • *Digital Medical Systems* • *Nashville, Tenn.* • *jhampton@vgerhealth.com*

Your article was interesting, but it doesn't appear to be borne out by recent trends.

Although there are some high-powered geezers pushing the envelope (usually surrounded by a cadre of twentysomethings), the majority are moving out to the golf course. Wisdom is useful, but there are already too many "wise men" around and not enough doers—hence the IT staffing crunch. I don't think it's a function of age as much as it is a function of technological obsolescence: The further behind the tech curve you are, the less relevant you are in solving today's problems.

Knowing all about SNA networks doesn't make you ready to be a project leader for an ATM implementation, and knowing about mainframes with Cobol development environments doesn't make you the right choice to lead a web project featuring Java-based object-oriented programming. Some of it comes down to knowing what you're talking about; some of it comes down to relating to the techo-druids whose genius you hope to harness.

In the last few years, we've seen a series of restructurings in the older, more established technology companies, and the early retirement option packages have been significant portions of those restructurings—that's no coincidence.

If you're sharp, keep on top of the trends and know when to move from techwave to techwave, you have a shot at one of those niche consulting jobs—and postponing that one-way trip to Florida. Otherwise, you'd better call to reserve your tee time.

Arnold Zamorano
*Chief Technologist*
*Plano, Texas*
*alphazed@mailexcite.com*

**WHAT DO YOU THINK?**

Send letters to *letters@cio.com*. Letters may be edited for length or clarity.

I thoroughly enjoyed your geezer article! The VisiCalc/Lotus reference brought back many memories. Thanks for the mood elevator (and notice I am not mentioning Prozac!).

Janet Sneddon
*Director*
*Job Skills Computer College*
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Not only do I remember the Selectric, but I also owned one. My favorite font was Adjutant. I rarely mention such archaic terms in the presence of my information systems students. Once, I mentioned that I had experienced "punching" cards, and I thought they would get me a walking cane!

Stephanie Smith, PhD
*Associate Professor of Management*
*Lander University School of Business*
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I still remember punch-cards and get blank stares from anyone under age 40 when I mention it.

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## CORRECTION

*We incorrectly stated Vinton Cerf's current title in "Inventing the Enterprise" (*CIO*, Dec. 15, 1999/Jan. 1, 2000). Cerf is senior vice president of internet architecture and technology at MCI Worldcom in Washington, D.C. We apologize for the error.*

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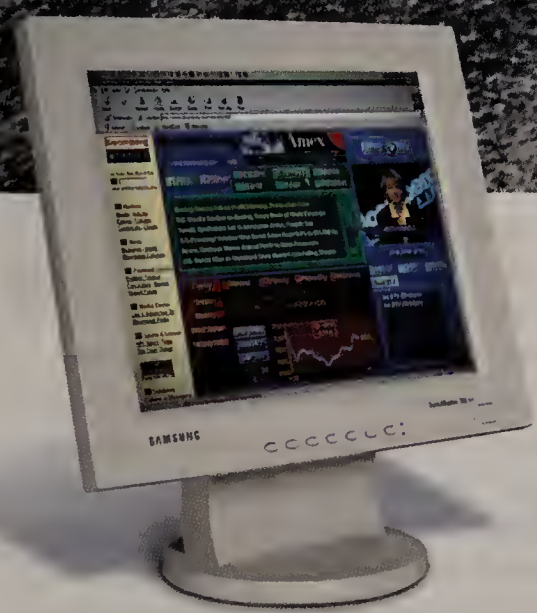

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## Adviser Spotlight

**A graduate of MIT's Sloan School of Management, Robert Barrett provides the small-company perspective on *CIO*'s advisory board. In October 1999, he joined PRI Automation of Billerica, Mass., a global supplier of advanced factory automation systems and software for semiconductor and precision electronics manufacturers, where he manages an IT staff of 20. Prior to that, he was at Unitrode, a similar-size high-tech manufacturer in Merrimack, N.H. At both of these companies, Barrett joined as their first-ever CIO. Although Barrett has worked at companies where he managed as many as 200 IT personnel and consulted at even larger firms, he says that small companies in growth mode are the most satisfying for a CIO. "The jobs I've enjoyed the most are the ones where we were starting out and building an organization. For me that's where the fun is. In a sense it makes you more to blame when things get screwed up," he notes, "but it's certainly a lot easier to manage your own mess than somebody else's when you walk in."**

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CIO REPORTER DISPATCH

# Sandy Kendall on the Slow Pace of Justice

THE PACE OF LIFE in the Netherlands is governed by bicycles. Upright, plodding, street-tough bicycles, not the sleek, streamlined Tour-de-France variety. They're not only popular and prevalent, they have the right of way. It makes for a civilized pace on the roadways, which carries over into all other transactions, social, commercial or legal. The Hague, where I was researching "Wired for Justice" (see Page 138), is the Netherlands' capital and home to international courts. In this conservative town, which lacks a large university and the associated reputation for wildness, the nation's measured pace is even more pronounced. Which may be why a lot of expatriates working there, for example at the United Nation's war crimes tribunal, complain about their temporary home. (It does rain a lot too.) These nationals of 62 different countries do every kind of work—from managing IT infrastructure to guarding the building, from cataloging evidence to signing indictments against guys like Slobodan Milosevic. Many have made careers of working in the world's trouble spots. Paul Risley, for example, spokesman for the prosecutor, was formerly spokesman for the special representative of the U.N. secretary general in Sarajevo in 1995—when the bombs were still falling. Other tribunal workers were formerly posted in Sarajevo, too, or in Rwanda, Athens and other dangerous or exotic locales.

Now these intrepid expats labor in a city of bureaucrats, The Hague's stately old buildings and slow-moving canals speaking of moderation, stolidity, time. To many of the workers, it all seems a little too staid. Yet that may just make it a perfect venue for pursuing justice. Tribunal staff may prefer Paris or New York or Geneva as places to live and work, but an atmosphere of hurry, a place with infinite distractions, might not be conducive to contemplation and studied judgment. Studied is the operative word—a typical tribunal case takes more than 30 months from apprehension to judgment, not including the time to generate indictments.

So the expats make the best of it, daydreaming about their next trip home or to Kosovo or to Amsterdam as they head to work, cycling at a determined, steady pace along the flat, tree-lined Kongressebau.

*–Sandy Kendall, Features Editor*

## Key Contributors to This Issue

The following individuals, though not members of our advisory board, were especially generous with their time and insight in helping us shape and execute the articles in this issue. We thank them for their critical contributions.

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CONFERENCE SUPPLEMENT TO *CIO* MAGAZINE

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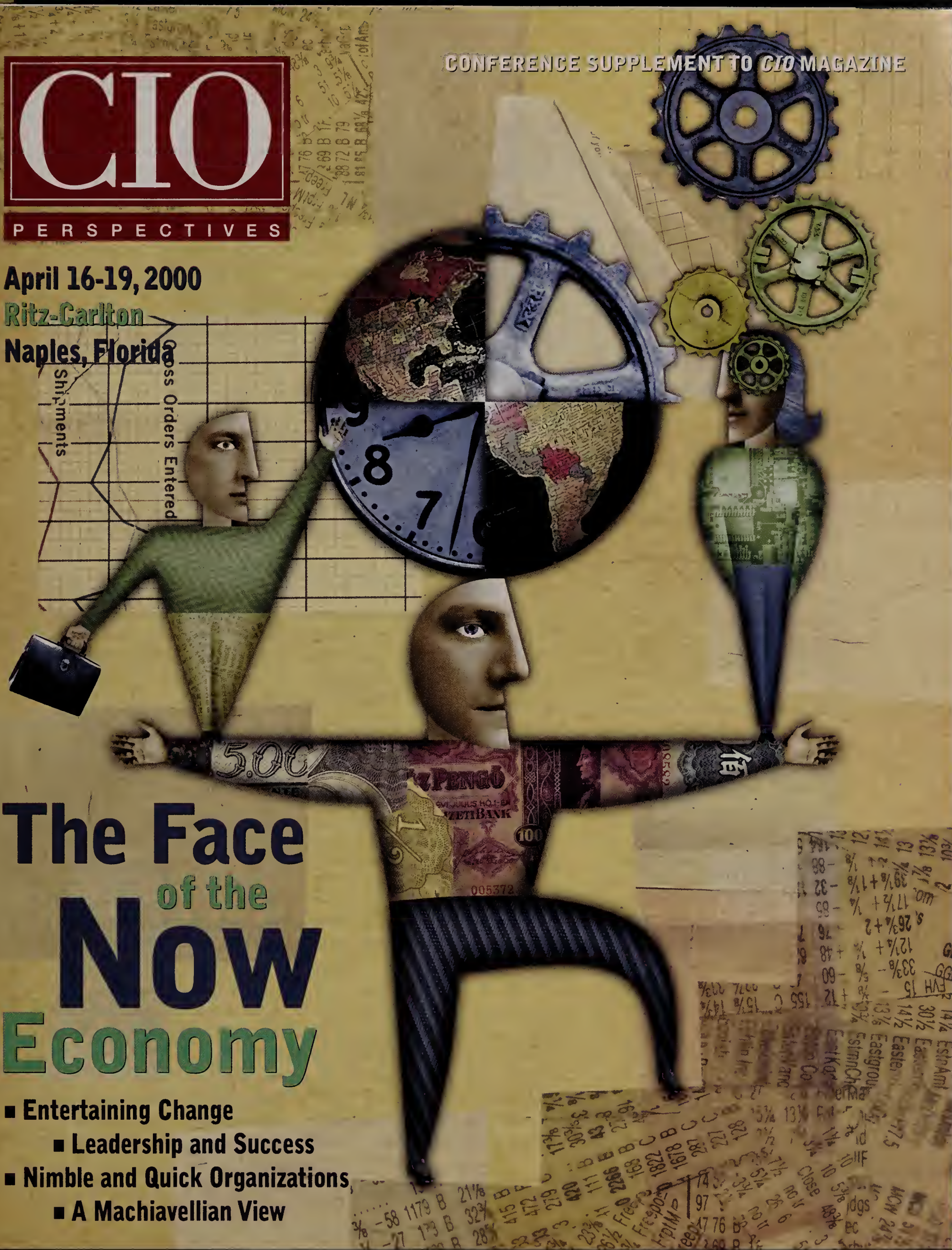


# The Face of the Now Economy

- Entertaining Change
- Leadership and Success
- Nimble and Quick Organizations
- A Machiavellian View

## TABLE OF CONTENTS

**CONFERENCE OVERVIEW**
Lynda Rosenthal and Gary Beach

**NOW, HOW?**
Ingenuity is the Key

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Detailed information about general sessions, business briefings, scheduled meals and activities throughout the conference.

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Cover illustration by Joyce Hesselberth

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General Session presentations will be given by **Justin Yaros**, CIO of Twentieth Century Fox; **Tom Woteki**, CIO of the American Red Cross; **Michael Dillard**, CIO of ClubCorp, Inc.; and **Ann Delligatta**, COO of autobytel.com inc.

Our Wednesday keynote presenter, **John P. Kotter**, author of *John P. Kotter on What Leaders Really Do*, offers insight into power, influence, interdependence and change, and spells out how executives can become more effective leaders. **Stanley Bing**, author of *Lloyd: What Happened* and his most recent work, *What Would Machiavelli Do?*, has been described as "an anthropologist of corporate culture, a satirist of corporate greed, a comedian of the libido." Featured presenter, **Rob Rodin**, former CEO and president of Marshall Industries, Inc. and author of *Free, Perfect, and Now: Connecting to the Three Insatiable Customer Demands: A CEO's True Story*, reveals how executives should prepare for and respond to the demands of today's customers — they want the product or service for FREE, they want it PERFECT, and they want it NOW.

You will also have the opportunity to meet the executives of our Corporate Host companies during a series of business briefing sessions, and view the technologies that will propel your enterprise into the Now Economy.

To enroll in the conference, fax the attached enrollment form to 508 879-7720 or call 800 366-0246; visit our Web site at *www.cio.com/conferences* for the complete agenda, hotel and travel information, and the online enrollment form.

Regards,

Lynda Rosenthal

Lynda Rosenthal
Executive Vice President and
General Manager, Executive Programs
CIO Communications, Inc.

Gary J. Beach

Gary Beach
Publisher
*CIO* Magazine
CIO Communications, Inc.

# Now, How?

## Ingenuity is the Key

BY TOM FIELD

We're not talking new, we're talking now — the Now Economy, that is. We're talking not about a time that's coming, but one that's here — a new age of business powered by the Internet and measured in terms of shortened cycles and speed of delivery.

We're talking about time-honored professions that have suddenly and permanently changed because of the new electronic medium; old businesses that have reinvented themselves; and new enterprises that have arisen with new business models that command instant electronic marketspace.

In short, we're talking about "The Face of the Now Economy," which is the theme of the next *CIO Perspectives* conference to be held April 16-19 at the Ritz-Carlton in Naples, FL.

**James Wetherbe, PhD.**, a *CIO Perspectives* veteran, will lead the conference, framing the discussion with his own first-hand observations about leaders who have harnessed the power of technology to transform their businesses to excel in the Now Economy. "Companies are finally realizing that technology is coming at them quicker and quicker, and leaders are having to make technology decisions and deliveries on shorter time frames," Wetherbe says. "Organizations have to be more nimble if they're going to be capable of changing business processes to incorporate these new technologies."

Nearly 20 years ago now, when ATMs were first introduced at banks, the financial services industry was slow to change its processes and customer services. But the early ATM adopters, as slowly as they tiptoed into these uncharted waters, did gain distinct market advantage over rivals who stayed ashore. "Companies don't even have that much time anymore," Wetherbe says. At Internet speed, companies move now or suffer soon. He will illustrate this point with insightful anecdotes about FedEx, which anticipated and prepared for the arrival of new technology-fired business processes, and Barnes & Noble — which didn't.

The keynote presenter will be **John P. Kotter, Harvard Business School professor** and author of *John P. Kotter on What Leaders Really Do*. He will speak in two contexts: the first, about the companies he has observed gaining early advantage in the Now Economy; the second, of how people in his own profession — education — are perhaps moving too slowly. "Harvard Business School is essentially a division of a corporation that's 370 years old — a corporation that's been very successful," Kotter says. And while other venerated institutions have begun changing their curriculum and teaching methodologies to adapt to the Internet, he adds, Harvard has been slow to embrace change. "It's a real challenge for us to be brought into the 21st century," Kotter says. "The job of the faculty here has not changed much — yet. But we are going to have to start thinking about how we can do things differently. There are all kinds of neat possibilities."

In his discussion about leadership and change, Kotter will talk about the characteristics of successful change efforts and the leadership engine that drives them. "We try to manage change," Kotter says, "[but] we too often miss the key ingredient: leadership. So, projects move too slowly, cost too much and give us far too much aggravation."

Among the conference's featured presenters are business and technology leaders from a variety of businesses new and old, for profit and non. Their common bond is their drive to thrive in the Now Economy.

**Ann Delligatta, executive vice president and COO of autobytel.com inc.,** will discuss her upstart company's challenges in changing the way people buy cars. Specifically, she will share the lessons autobytel.com has learned about the unique expectations of the Internet customer and how her company has responded to those needs. "The e-consumer wants to be 'in charge' of the transaction. They want to buy, not be sold to," Delligatta says. "The successful e-commerce site will provide them with the data, the experience and the tools to do just that."

In discussing the role of technology in this environment, Delligatta will address the organizational challenges and opportunities, the change in vendor relationships, and opportunities for cooperation and partnership with companies that might not have been considered in the past. The challenge to be met is for business leaders to overcome their own barriers and misconceptions about one another's roles. "We have been talking for years about the need for tighter collaboration between business and technology leaders," Delligatta says. "The Now Economy demands that this become pro-active collaboration, with the technology organizations frequently taking the leadership role."

**Justin Yaros, senior vice president and CIO of Twentieth Century Fox,** is in the midst of an industry — several different entertainment industries, actually — that is seeing radical, fundamental change. Internally, Fox's business processes are moving to the Web, allowing executives greater real-time access to distributors, licensees and partners. And in each of Fox's entertainment mediums — film, television and music — the Internet is on the verge of changing everything. "It may not just change how we offer entertainment, but the very format of what we offer," Yaros says.

Digital delivery of music, interactive TV, new PC entertainment options — Yaros must explore all of these avenues and more. "It's definitely the equivalent of trying to hit a moving target with a weapon that hasn't been invented yet," Yaros says. He has been at Fox for just over two years, and in that time the company has changed dramatically, and so have executives' perceptions of IT. Yaros has had to adjust to a more prominent role in the company, and he has had to make major technology decisions not on what systems will do, but on what they might do — and what the marketplace might demand. No question, Yaros won't strike gold with every decision, but he has the power and the drive to take reasonable risks. "My attitude is that it's better to take a number of risks than to take none at all," Yaros says. "So, we're going to take small risks — but a lot of them."

**Michael Dillard, executive vice president and CIO of ClubCorp Inc.,** wants to share an interesting lesson he recently learned about his company's 250,000 leisure resort members. Dillard and other ClubCorp executives always assumed that ClubCorp appealed to stereotypical country club members — older, grayer folks who are not especially attuned to technology. But in a recent customer survey, Dillard found that his membership is much younger and more tech-savvy than anyone believed. "Over 90 percent of our members use the Internet, and Web surfing is their #2 leisure activity behind reading," Dillard says. "It turns out our members expect a lot from technology."

And consequently, ClubCorp is now using technology to change the way it delivers member services. Dillard is building Web sites for each of the company's 240 clubs and resorts, helping them to create online affinity groups of members who want to schedule leisure events or just chat. New customer relationship management (CRM) systems help club employees recognize and greet members at the door; new chip-embedded membership cards will give members free, prepaid reign of the facilities so that they don't have to carry cash. Internally, ClubCorp is centralizing and streamlining its processes so that it can deliver better services faster. "That's the part that has to be invisible to our guests," Dillard says. "Our goal is making life better for our members and our guests. If we can use technology to do that — well, that's really the rallying cry for what we do here."

"We try to **manage change** [but] too often miss the **key ingredient: leadership**"

At the **American Red Cross, senior vice president and CIO Thomas Woteki** is faced with some interesting questions — some of which really are matters of life and death. Traditionally, the Red Cross has been a low-tech, decentralized institution whose chapters have grown up knowing distinct geographic boundaries. Yet today, with the power of the Internet, this non-profit organization's traditions are being challenged. "How does an historic institute adapt to a digital environment where geography is irrelevant?," Woteki asks. For the most part his answer has been, "Slowly."

Since joining the Red Cross in 1994, Woteki has introduced new technologies to track data about the organization's blood business (the Red Cross holds about half the nation's blood supply), and now he is bringing the chapters together via the Internet. Yet, the seemingly simple act of taking the Red Cross online raises a whole new set of fundamental business questions: should the individual chapters have their own individual sites or be part of just one, centralized Web strategy? Currently, each local chapter raises its own funds. How does that change when the geographic boundaries are removed? How does the Red Cross respond to competition from other health service agencies that now have access to the same customer base and can provide some of the same services? To answer each of these questions, Woteki must answer an even more strategic question: "How do we leverage our logo and brand name in the context of our humanitarian and service mission?"

**Rob Rodin, former CEO and president of Marshall Industries,** knows about fundamental business change. Six years ago, he started a revolution that saw his 53-year-old electronics distribution business transition painfully from the old to the now economy. Marshall was a successful, $500 million enterprise in 1994, but Rodin and other business leaders foresaw the need to move the traditional, brick-and-mortar business online. Virtually overnight, Marshall changed its management staff, eliminated sales commissions, switched operating systems and completely reinvented itself as a business-to-business e-commerce venture. "We restructured every definition of value in our organization," Rodin says — and it was a painful transition.

Yet, the gain from this pain is that today Marshall Industries is a $2 billion e-commerce leader that is considered a benchmark by which other enterprises must gauge their own Now Economy transitions.

Rodin details Marshall's experience in his new book *Free, Perfect, and Now: Connecting to the Three Insatiable Customer Demands: A CEO's True Story*, and he will relate some of his lessons learned in his presentation. Like any fundamental business transformation, Marshall's story is not a dispassionate one; it's personal. "I'm not a consultant; I did this to myself," Rodin says, and his is a message that resonates with other business executives who face similar situations. "People always say to me, 'It's nice to hear how scared you were,'" Rodin says. "It's a real story; it's human."

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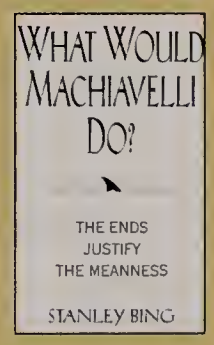
*Tom Field is a Senior Editor at CIO Magazine. Contact him at tfield@cio.com*

## Bing Brings Machiavellian Influence




Ever find yourself in a business situation where you wonder, "What Would Machiavelli Do?"

Well, Stanley Bing has — many times — and he's written a new book detailing his conniving, manipulative answers. He will share his book and some of his insights at the *CIO* conference.

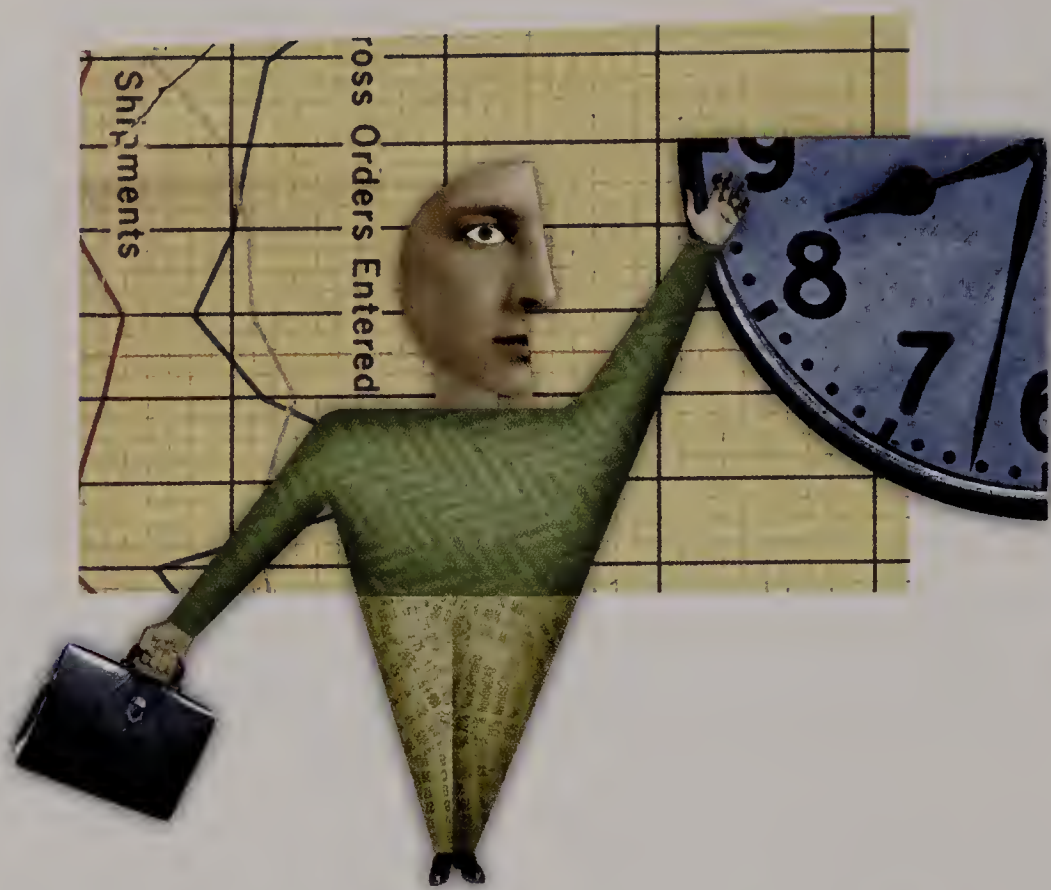
"My book is a handbook on how to get mean and nasty," says Bing, a pseudonymous New York business columnist. "Who other than CIOs could be in more need of Machiavellian assistance?"

Bing, who has long chronicled the real-life business experience in his popular *Esquire* and *Fortune* columns, is no stranger to the CIO mindset. "CIOs tend to be anal-retentive types, but at the same time they're quite dreamy," Bing says. "Raging within these grey pinstriped suits are Corvette-driving, party animals yearning to burst free. These people tend to respond well to the rude comments I make."

Bing's book and presentation share a common Machiavellian theme: the ends justify the meanness. Among insights Bing will share are:

- Be unpredictable
- Be a paranoid freak
- Always be at war
- Lie when necessary

"I'm the anti-Harvard Business School," Bing says, distinguishing himself from keynote presenter John P. Kotter, an HBS professor. "HBS is based on the principle that business is a rational occupation," Bing says. "I embrace the opposite."




# The Face of the Now Economy

**APRIL 16-19, 2000 • RITZ-CARLTON • NAPLES, FLORIDA**

## SUNDAY, APRIL 16

11:30 a.m.
**The Leaderboard Classic Golf Tournament**
Hosted by Cabletron Systems, Inc. and Lockheed Martin Corporation

3:30 p.m. – 5:30 p.m.
**Conference Registration**

6:30 p.m. – 8 p.m.
**Welcome Reception and Registration**

8 p.m. – midnight
**Hospitalities/Networking**

## MONDAY, APRIL 17

7:30 a.m. – 8:30 a.m.
**Breakfast**

8:30 a.m. – 9 a.m.
**Welcome, Opening Remarks and KnowPulse℠ Poll**

GARY BEACH
Publisher
*CIO* Magazine

The KnowPulse ("Knowledge") poll, an ongoing opinion poll conducted by *CIO* magazine, captures IT and business executives' perspectives on current topics in the news. Past polls have been covered by *CIO* magazine, as well as other prestigious media organizations, including *CNN*, *Newsweek*, *The Wall Street Journal*, and *U.S. News & World Report*.

9 a.m. – 9:45 a.m.
**Organizations Must Be Nimble, Organizations Must Be Quick**

DR. JIM WETHERBE
Conference Moderator
FedEx Professor of Excellence
The University of Memphis
Executive Director
FedEx Center for Cycle Time Research

Rampant technological change has led to the need for rampant organizational change. We've seen product life cycles shorten dramatically over the past several decades. We are now seeing that organizational business models have shorter life cycles. This has caused the need for organizations to dramatically change the way they do business, almost overnight. Wetherbe will discuss some of the aggressive approaches that need to be followed for organizations to be nimble enough to achieve quick changes as needed during these turbulent times.

9:45 a.m. – 10:45 a.m.
**Entertainment — Reinventing the Industry**

JUSTIN YAROS
Senior Vice President and CIO
Twentieth Century Fox

While new media have emerged, the fundamentals of the film industry remain much the same since the first movies were made and distributed in

the early 1900's. Digital technology and the Internet are leading to a complete revolution of how entertainment is created, distributed and consumed. One need look no further than the music business to see how technology can virtually overnight uproot the fundamental rules of an entire industry. The Internet and technology, along with MP3, have caught the giant recording companies sleeping and have threatened to turn them and their billion dollar infrastructures into the dinosaurs of the digital age. Yaros discusses how Fox is working to understand and prepare for both the threat and the opportunities technology represents to the entertainment industry.

10:45 a.m. – 11:15 a.m.
**Coffee Break**

11:15 a.m. – 12:05 p.m.
**Business Briefings**

12:10 p.m. – 1:10 p.m.
**Luncheon**

1:15 p.m. – 2:15 p.m.
**Navigating in the Digital Marketplace**

ANN DELLIGATTA
Executive Vice President
and COO
autobytel.com inc.

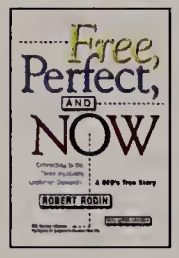
Autobytel.com has revolutionized the way people shop for and buy cars. Since its inception in 1997, the company has become the market share leader in online car sales, currently generating over a million dollars an hour. Delligatta discusses how they responded to the unprecedented expectations of the Now Economy customer, and how this translates into specific requirements for CIOs and business executives. She discusses potential organizational challenges and opportunities on the digital marketplace horizon, and offers strategies for CIOs and business executives at various stages in this evolving process.

2:20 p.m. – 3:10 p.m.
**Business Briefings**

3:10 p.m. – 3:40 p.m.
**Coffee Break**

3:45 p.m. – 4:45 p.m.
**Connecting to the Three Insatiable Customer Demands**

ROB RODIN
Former CEO and President
Marshall Industries, Inc.




In a world where knowledge is king, the Web never sleeps, and competitive challenge increases exponentially, Rodin reveals how CIOs should prepare for and respond to the three insatiable demands of today's customers: they want their product or service for FREE, they want it PERFECT, and they want it NOW. Attendees will receive a complimentary copy of his work, *Free, Perfect, and Now: Connecting to the Three Insatiable Customer Demands: A CEO's True Story.*

5:30 p.m. – 7 p.m.
**Reception**

7 p.m. – midnight
**Hospitalities/Networking**

## TUESDAY, APRIL 18

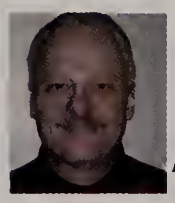
7:30 a.m. – 8:30 a.m.
**Breakfast**

8:30 a.m. – 9:30 a.m.
**Making Life Better for Our Members and Guests**

MICHAEL DILLARD
Executive Vice President
and CIO
ClubCorp, Inc.

Excelling in the private clubs industry has always been about high-*touch*, not high-*tech*. Today, ClubCorp, the world's largest owner of golf clubs and resorts, is busy marrying the *touch* and the *tech*. With over 70% of its members using the Internet at least once a day, the company is challenged with finding ways to use technology to attract and retain more members and increase club usage. Innovative use of the Internet is one mechanism, and technology that supports smooth operations is another. Dillard discusses ClubCorp's technology strategy and presents an overview of the careful considerations required before melding high-*touch* and high-*tech*.

9:30 a.m. – 10:30 a.m.
**The American Red Cross and the Now Economy: Moving One of America's Most Trusted Logos into the Digital Economy**



THOMAS H. WOTEKI, PH.D.
CIO and
Senior Vice President
American Red Cross

At nearly 120 years old, the American Red Cross (ARC) is one of the nation's most trusted and respected institutions. Its logo is a symbol of hope and trust recognized everywhere. Moving the ARC into the

Now Economy involves delivering its traditional services via the Internet, while protecting its most important asset—the Red Cross brand identity. Woteki discusses how the ARC is rethinking its service delivery models—the traditional geographic and institutional boundaries the ARC is having to reset (or eliminate) to meet market demands at Net speed; and the new business models necessary to compete with other ".orgs" for volunteers, donors and customers.

10:30 a.m. – 11 a.m.
**Coffee Break**

11 a.m. – 11:50 a.m.
**Business Briefings**

Noon – 1 p.m.
**Luncheon**

1 p.m. – 2 p.m.
**Networking Experience**
An exclusive time set aside for you to meet with your peers.

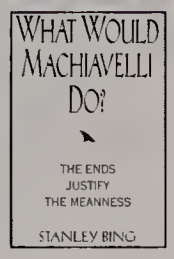
2 p.m. – 2:50 p.m.
**Business Briefings**

3 p.m. – 3:50 p.m.
**Business Briefings**

3:50 p.m. – 4:15 p.m.
**Coffee Break**

4:15 p.m. – 6:15 p.m.
**Business Life Through the Prism of Machiavelli**

STANLEY BING
Author, *What Would Machiavelli Do?* and *Lloyd: What Happened?*




How did the rich and powerful individuals who move the earth get where they are today? Are they smarter? Faster? Better looking? Certainly not. Some are even short and ugly. What, then, is their edge? The answer is simple. They're meaner, that's all. And if you want to get where they're going, you'll be meaner, too.

Walking in the steps of the Florentine master, Bing will show you how to be all the Machiavelli you can be. How to beat people who are smarter than you are. How to make other people cringe and whimper when you enter a room. How to get what you want when you want it whether you deserve it or not. Without fear. Without emotion. Without finger-wagging morality. They do it. You can too.

Bing offers a simple, detailed plan for those with the courage to leave kindness and decency behind, to seize the future by the throat and make it cough up money, power and superior office space.

6:15 p.m. – 7 p.m.
**Reception with Stanley Bing**

7 p.m. – midnight
**Hospitalities/Networking**

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## WEDNESDAY, APRIL 19

7:30 a.m. – 8:15 a.m.
**Breakfast**

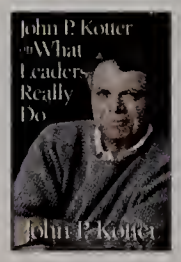
8:15 a.m. – 8:30 a.m.
**KnowPulse℠ Poll Results**

LEW MCCREARY
Editorial Director
*CIO* Magazine

McCreary will present the results of Monday morning's poll.

8:30 a.m. – 10:30 a.m.
**Leadership and Change: Challenges in the New Economy**

JOHN P. KOTTER
Konosuke Matsushita Professor of Leadership
Harvard Business School
Author, *John P. Kotter on What Leaders Really Do*




The speed of change will continue to increase, driven by technology, globalization, increasing competition, and many other factors. Yet most of us have not been raised in a world in which non-incremental change was handled well. So we struggle. We do what we know how to do; we try to manage change. We too often miss the key ingredient—leadership. So projects move too slowly, cost too much, and give us far too much aggravation. Kotter discusses the common shape of successful change efforts and the leadership engine that drives them.

10:30 a.m. – 11 a.m.
**Coffee Break**

11 a.m. – 11:30 a.m.
**Question & Answer Session with John P. Kotter**

11:30 a.m. – 11:45 a.m.
**Closing Remarks**

JIM WETHERBE

## BUSINESS BRIEFINGS

### Business Intelligence: A Strategic Imperative for the e-Enterprise

KATHERINE GLASSEY
Co-founder and Chief Technology Officer
Brio Technology

In today's e-enterprises, business executives no longer have the luxury of waiting days, weeks, or months for information they need to make decisions. Individuals need fast, easy and reliable access to the information stored in their core business systems so they can make fact-based decisions on the turn of a dime. To achieve this, the information must be presented so it can be quickly consumed, shared and acted upon by an organization's diverse group of users. Glassey presents how organizations should approach their business intelligence infrastructure for achieving maximum information value for all business channels, including the Internet. She discusses key attributes that are necessary for deploying successful e-business intelligence solutions.

### IT Infrastructure Evolution: Enabling the "Anytime, Anywhere, Any Access" Business Model

JOHN ROESE
Chief Technology Officer
Cabletron Systems, Inc.
Author, *Switched LANs: Implementation, Operation, Maintenance DHCP: Automated IP Management*

Infrastructure technology is an enabler of the new Internet economy. Roese examines new and emerging technologies that facilitate a more automated model of information access to meet the needs of an increasingly mobile, diverse and demanding customer community. He addresses the increasing need for mobile access; developments in unified security access technologies; delivery of customized transport services based on business policy and organizational structure; and using next-generation service-level management to meet customers' IT demands.

### Customer Interaction and eBusiness — Tying It All Together

COLLIN BRUCE
Vice President
Chordiant Software

Customers are placing increasing value on convenient access to information, products and services. In the next generation of online commerce, companies must become customer-centric to attract and retain business. They must provide consistent, high-quality service across all communication channels including the Internet, e-mail, self-service systems, call centers, and branch outlets.

Bruce details how global companies are offering customers highly personalized e-business, marketing, sales, service and support across all communication channels.

### Application Service Providers: The New Utility for the Information Economy

DAVID A.G. JONES
Senior Vice President
Worldwide Sales
Citrix Systems, Inc.

What if your company could "turn on" access to applications as easily as flipping a light switch or twisting a faucet? Until now, organizations requiring software – from e-mail to ERP – had to shoulder the cost and complexity of their own computing environments. Constant upgrades, IT staff shortages, support for remote users, compatibility issues – these are some of the challenges of in-house computing systems. The emerging Application Service Provider (ASP) industry is replacing this scenario with a simple solution – for a set fee, ASPs host applications on central servers and deploy them to users according to agreed-upon service levels. Enabling this new "utility" model is server-based computing technology that delivers fast, reliable application access over any connection to users on any type of device. Just like phone service or cable TV, applications are ready when you are.

### Managing Information Across the Extended Enterprise

TERRY MILHOLLAND
CIO
EDS

As desktop computers, hallway copiers, and handheld devices evolve into two-way portals to the world of information, companies are being transformed into extended virtual enterprises where employees, suppliers, suppliers' suppliers, customers, and customers' customers exchange information on a regular basis. Every individual participating in these extended enterprises is a data owner with a digital persona, consisting of a unique personality and specific preferences, rights, and needs for information. In tomorrow's business environment, CIOs

will be faced with increasingly complex decisions regarding who owns what information, who has access to what information, and how they are allowed to use it.

### Enterprisewide E-Business: The Case for Both Clicks and Mortar

TONY LEACH
Executive Vice President
Operations and Services
E.piphany

The future of e-business relies on the seamless integration of an organization's e-channel with traditional distribution channels. Increasingly, companies are discovering that many customers do not want a single channel to buy their goods. They want the convenience and prices of the Web, a store and a person to talk to, someone they can reach on the phone, and even a catalog to hold in their hands. What companies need is a system that allows them to achieve a single view of the customer to enable insight and personalized action across all touch points. Companies need to provide customers with what they want, when they want it and through the channel that they prefer. This session will discuss strategies for achieving life-long customer relationships.

### NUMA-Q: An Open Minded Enterprise Solution

IAN MILLER
Vice President of
Global Marketing
IBM Corporation

Miller highlights NUMA-Q enterprise-class system features and reveals how organizations can benefit from this open minded server solution. In its third generation, NUMA-Q provides the investment protection needed to preserve mission critical applications, including e-business, business intelligence, and customer relationship management solutions. With the Intel Architecture at its core, NUMA-Q has incredible flexibility, high availability, and scalability to meet fast changing business requirements while minimizing customer and partner risk.

### Developing the eKnowledge Center

THOMAS MURPHY
Research Manager,
IT Advisor
International Data
Corporation

"The age of electronic knowledge has arrived, and organizations in every industry sector are rushing to find ways to increase, improve, and leverage their knowledge capital. To accomplish this, companies need more than the technology. They need a strategy to organize and plan their knowledge efforts. As research manager for IT strategies at IDC, Tom Murphy recently completed a study that defines how organizations can create an eKnowledge Center. The presentation he has prepared from his data describes the role that the CIO and the IT organization can play in building knowledge capital across an organization and linking the different areas of knowledge. In the presentation, he also describes the "Left Brain/ Right Brain" concept of developing a balanced focus on knowledge across an enterprise.

### The Third Generation of e-Business

CHRISTOPHER S. THOMAS
Director, Strategic Marketing,
Enterprise Server Group
Intel Corporation

The evolution of e-Business is moving at a stunning pace. The first generation of e-Business meant posting static information about your company's products on a Web site. Then came the second generation—integrating your Web site with your internal business processes to enable e-commerce across the Internet. But is your company ready for the *third* generation of e-Business? Do you know how to improve your customer's Internet experience and empower them to make better and faster decisions? Advanced planning for this paradigm will be critical to create a competitive advantage for your company. Come hear Intel and other industry leaders' vision of the third generation of e-Business, and find out how your company's business Internet systems and solutions need to be designed to succeed in this new era.

### The Balancing Act: e-Business and the Information Backbone

ED KOEPFLER
President
Intentia Americas

Ice cream, furniture, personnel recruitment, dairy. What do these companies have in common? They figured out how to be profitable with e-business. What's their secret? They learned to leverage best practices and effective management approaches with the right information technology backbone to ensure success. Koepfler explores the strategies, implementa-

tion and payback of completing an enterprise infrastructure for the greatest impact on business and e-business.

### Information Continuance: Integrated, Independent and Intelligent Solutions for the Enterprise

PAUL PAYACK
Vice President, Marketing
Legato Systems, Inc.

Today, customers are telling us that they must increasingly leverage their corporate data assets to make timely and knowledgeable business decisions. To do so, they require a solution that is complete, open and integrated. However, all too frequently, data and applications are still managed independently. As a result, businesses are having difficulty scaling their information systems across a variety of platforms — and across their enterprise. And the steadily shrinking "backup window" further impedes their ability to implement time-critical decisions.

Payack discusses how businesses must manage data movement across the enterprise to make the most of their data assets and enhance customer value. He explains how to deploy the infrastructure and technology necessary for effective management of data movement.

### Connecting *E*-Business to *The* Business

SCOTT STONE
E-Business Vice President
Lucent Technologies

Whether you are an established company looking to transform your business through an e-Business program or a new online venture looking to link to real-world logistics and fulfillment, all enterprises face a growing need to integrate Web-based customer interactions into the physical world — and its existing systems environment. This includes rapidly emerging requirements to integrate intelligent communications networking with e-Business strategy.

Stone discusses the cutting-edge technology that allows enterprises to establish their e-commerce infrastructure as a competitive asset. He discusses the differences in deployment for enterprises with the need for legacy system integration versus green field implementation, and how both approaches can lead to competitive differentiation.

### Creating a Business-centric Model of the Enterprise Network

BOBBY LIE
Senior Vice President
Fidelity Investments
Courtesy of NetScout

The cost to deploy and maintain a network infrastructure is ever increasing. The cost increase is driven by the need to facilitate a wave of new applications in support of e-business such as Web call centers, video streaming and on-line trading. While end users perceive network bandwidth as a free commodity, the spiraling cost of network usage continues to escalate from 30 to 75 percent a year.

To address this business need, Fidelity Investments recently deployed a Usage Based Billing system, a framework for monitoring the amount of resources consumed by customers and billing them accordingly. Lie discusses how within the first year, Fidelity achieved an ROI of 500% as well as other productivity gains such as increased application responsiveness, capacity planning, and improved relationships with information technology customers.

### Automating the Entire Online Process - From Order Entry to Fulfillment: A Case Study

DOUG BROWN
Director of Operations
for Periodical Publishers'
Service Bureau
Courtesy of Xerox

It appeared automated, but behind the scenes the old process was expensive and labor intensive. Once an order was received via e-mail, it was re-keyed into a transaction processing system, credit card transactions were processed by hand, and the fulfillment house received instructions via hard copy, computer tape or e-mail.

Sound familiar? It's a challenge to leverage electronic commerce opportunities, integrate on-line technology with legacy data systems, keep customers satisfied, management delighted and costs down — but it can be done!

Brown will "Share the Knowledge" on how he partnered with Xerox Connect to develop a solution that integrates PPSB's online ordering process with its back-end transaction processing systems to support their multimedia Newsstand Web site (*www.mmnews.com*).

### Business Briefings also presented by:

Cable & Wireless
GTE Internetworking
Hewlett-Packard
Information Builders, Inc.
Iomega
Lockheed Martin
Nortel Networks
ProSight
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Incorporated in 1989, **Brio Technology, Inc.** (Nasdaq: BRYO) is the only business intelligence software provider to offer a complete platform that addresses the full range of decision processing needs and contributes to the overall business performance of today's Web-enabled e-enterprise.

The vision behind the company's flagship platform, Brio ONE, is to provide customers with the broadest range of business intelligence capabilities for users and information sources.

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With customers in 70 countries, **Cable & Wireless** (C&W) is a major global telecommunications business with revenue of approximately $14 billion in the year ended March 1999 and over 50,000 employees. C&W offers a range of services spanning broadband data and Internet services, fixed and mobile voice, as well as interactive entertainment and information. Since November 1998, it has announced major investments in advanced networks in the US and Europe, the restructuring of Cable & Wireless Communications in the UK and has acquired full control of Cable & Wireless IDC in Japan to support this strategy. Visit us at *www.cableandwireless.com.*

**Cabletron Systems** — a recognized leader in high-performance networking solutions — has provided reliable LAN, WAN, ATM and remote access communications to millions of people throughout the world. Among its many customers are Fortune 1000 companies; service providers and telcos; federal, state and local government agencies; universities and academic institutions; health care and financial institutions; small businesses and more.

Through its award-winning technology backed by an unrivaled service and support organization, Cabletron delivers scaleable solutions that support today's mission-critical applications while lowering the total cost of network ownership and maximizing a customer's return on investment. All of which makes Cabletron your *e-business communications specialist.*™

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**Chordiant Software** builds customer relationship management applications tailored for business-to-consumer companies, serving traditional and e-business environments, with a single view of the consumer.

Unlike Web-only and customer relationship point solutions, Chordiant's flagship product, Chordiant CCS — Customer Communications Solution — embraces new customer communications methods while leveraging existing ones.

Chordiant unifies Web, branch and call centers through a single customer model that integrates all services, offerings and business goals. As a result, Chordiant allows enterprises to retain customers and grow revenue by enabling more sophisticated relationships.

**Citrix Systems, Inc.**, (Nasdaq: CTXS), headquartered in Fort Lauderdale, FL, is the global leader in application server software and services that offer "Digital Independence™" — the ability to run any application on any device over any connection, wireless to Web. Citrix is one of the world's fastest-growing software companies, with more than 100,000 customers, including 99 of Fortune 100 firms. Its products include MetaFrame™ software and Independent Computing Architecture (ICA) technology. Citrix was recently named to the Standard & Poor's 500 Index.

**EDS** is a professional services firm that applies consulting, information and technology in innovative ways to enable clients to improve their overall performance.

Through an "end-to-end" portfolio of services that includes all aspects of electronic business, EDS is the provider of choice for thousands of leading businesses and governments around the globe. EDS' business is making clients more successful. The company works with its clients to extend their enterprises and catapult them ahead of the competition. It provides thought leadership and creates measurable value by unleashing the full potential of information and technology.

For more information about EDS, please visit *www.eds.com.*

**E.piphany** is the leading provider of Web-based Enterprise Relationship Management (ERM) solutions. E.piphany's vision for ERM is to build customer intimacy by closing the loop between everything known about a customer and every action taken in the course of the relationship. E/4, the company's flagship ERM platform, extracts information from existing databases and front-office applications, analyzes it, and presents it in a company's language using a simple "Yahoo-class" user interface to reach everyone with a need to know. E.piphany helps companies create unbreakable lifetime relationships. These are high impact, high return on investment opportunities, and solving them has an immediate effect on profitability.

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**GTE Internetworking**, a unit of GTE Corporation (NYSE: GTE) offers customers, from consumers to Fortune 500 companies, a full spectrum of integrated Internet services using IP networking technologies. GTE Internetworking delivers complete network solutions, including dial-up and dedicated Internet access, high-performance Web hosting, virtual private networks (VPNs), managed Internet security, network management, enhanced IP services, systems integration and Web-based application development for integrating the Internet into business operations. More about GTE Internetworking can be found on the Internet at *www.bbn.com.*

**Hewlett-Packard Company** (HP) is a leading global provider of computing and imaging solutions and services for business and home. HP capitalizes on the opportunities of the Internet and the proliferation of electronic services. We are the second-largest computer supplier in the world, with 83,200 employees worldwide and had total revenue from continuing operations of $42.4 billion in 1999 fiscal year.

HP is extending its leadership in enterprise computing to the Internet marketplace, specifically in the areas of e-services and digital imaging. HP will enable the vision of e-services via partnerships and ventures of its own in the areas of apps-on-tap, which is pay-as-you-go software and e-services portals.

**IBM** NUMA-Q, formerly Sequent Computer Systems, is the leader in scalable Intel-based server solutions for e-business. IBM NUMA-Q platforms and services are optimized for the scalability, availability and manageability requirements of large and rapidly growing e-business infrastructures. There are more than 10,000 NUMA-Q and NUMACenter installations worldwide, including some of the world's largest and most sophisticated business intelligence, CRM and ERP environments. For further information, phone the IBM NUMA-Q at 503 626-5700 or 800 257-9044 or visit our Web site at *www.ibm.com/servers.*

**Information Builders** (IB) is one of the world's largest independent global software companies, with offices around the world and revenues in excess of $307 million in 1998.

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**Intentia International** is one of the world's leading suppliers of Enterprise Applications to companies that manufacture products in discrete and process environments. Intentia is an ISO 9000 certified software developer and worldwide IBM development partner for the IBM AS/400. Our Enterprise Application, Movex, is designed to improve the underlying business processes within distribution and manufacturing companies, in the areas of logistics, production, distribution and finance. Available in 24 languages, Movex is implemented in more than 4,000 sites worldwide. Intentia ranks among the top 10 worldwide ERP, supply chain solutions providers and has more than 3,000 employees in 40 countries around the world. For more information on Intentia and Movex business applications, please call 1-800-SW-MOVEX or visit us at *www.intentia.com.*

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**Legato Systems, Inc.** (NASDAQ: LGTO), is a worldwide leader in enterprise storage management software. Helping companies leverage business-critical, corporate data assets, Legato's continuum of products and services enable information continuance, a seamless approach to the movement, management and protection of data throughout an enterprise. Founded in 1989, Legato's storage management software products have become the recognized industry standard with the largest installed base representing over 65,000 customers. Legato's products are available through a network of Legato-licensed resellers, integrators and OEM partners. Legato's corporate office is located at 3210 Porter Drive, Palo Alto, CA 94304. Telephone: 650 812-6000.

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# trendlines

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*Edited by David Rosenbaum*

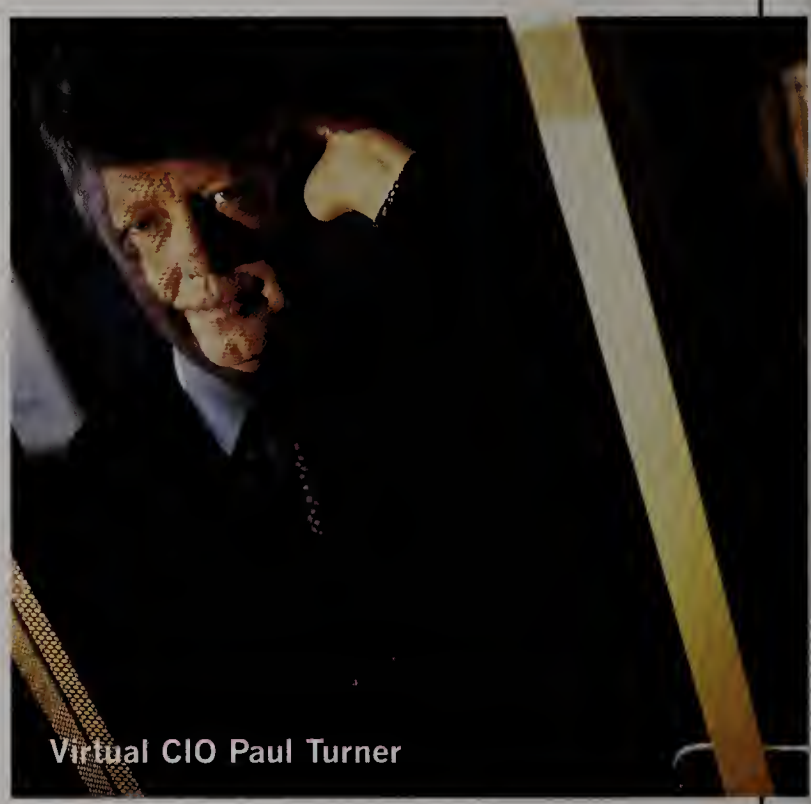
## Department of BIG, Scary Numbers

**$114 BILLION:** Estimate for the U.S. cost of Y2K repairs between 1995 and 2001. **$28 BILLION:** Size of the U.S. e-commerce consulting market in 2003. **$200 MILLION:** What the world spends on IT every hour. **$1.75 TRILLION:** What that works out to every year. **$75 BILLION:** What was spent in the United States during 1998 on IT projects that ultimately failed. **1/3:** Fraction of their lives Gen Y-ers will spend on the internet. Sources: International Data Corp.; Kennedy Information; Rubin Systems; The Standish Group International; Fortino Group

OUTSOURCING

# Being There (and Everywhere)

*By Meridith Levinson*



Virtual CIO Paul Turner

**CIO PAUL TURNER** can work up to 60 hours a week, earn up to $250 grand a year plus stock options and still have time to tee it up every Friday afternoon. What's his secret? He's virtual.

Turner, 47, is one of 10 virtual CIOs (VCIOs) working for If & Then, a small San Jose, Calif.-based IT services company. Founded in January 1999, If & Then deploys its VCIOs to small and midsize companies, mostly in Silicon Valley, that don't have the resources to attract or pay for a full-time CIO. The VCIOs attend onsite meetings with each of their clients (Turner is currently CIO for two companies: Frog Design and Everdream) at least once a week, sit in on net conferences or web-enabled meetings when they can't be onsite and are available (virtually) 24/7 via e-mail and phone.

"I was skeptical at first about [Turner] not being onsite five days a week," says Doreen Lorenzo, COO of Frog Design, a multimedia design agency headquartered in Sunnyvale, Calif. "In reality, it works fine. We have six or seven IS people who take care of day-to-day needs." Turner, she says, takes care of strategic projects like the company's ERP implementation.

Like the other If & Then VCIOs, Turner has spent many years—30, in his case—in IT. Prior to joining If & Then last September, he was director of IT for PE Biosystems, a division of Norwalk, Conn.-based PE Corp.

For Turner, the beauty lies in being able to focus on the big picture rather than quotidian distractions and emergencies. As a VCIO, Turner says, "You

**Continued on Page 38**

THE (TIME) KILLER APP

**"The most frequently used application on a salesperson's laptop is Solitaire."**

–Michael Hammer, president of Hammer and Co., author of *Reengineering the Corporation: A Manifesto for Business Revolution*

PHOTO BY MARK ROBERT HALPER

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# Being There

Continued from Page 36

can have strategic influence without managerial responsibility."

The downside? Ringing cell phones. Turner says that his major challenge is portioning his time.

VCIO Bob Dijkman, 55, who also has spent many years in IT, agrees: "It's more demanding than I originally anticipated."

Crazy as work can get, says Dijkman, it's always gratifying. He recently implemented a call center system for Everdream Corp., a computer services startup based in Mountain View, Calif., where Turner has since been assigned as CIO. The job took him 45 days.

"The real satisfaction of being a virtual CIO," Dijkman says, "comes from quick rewards. You can finish work within weeks or days, move on to another task and watch the company evolve."

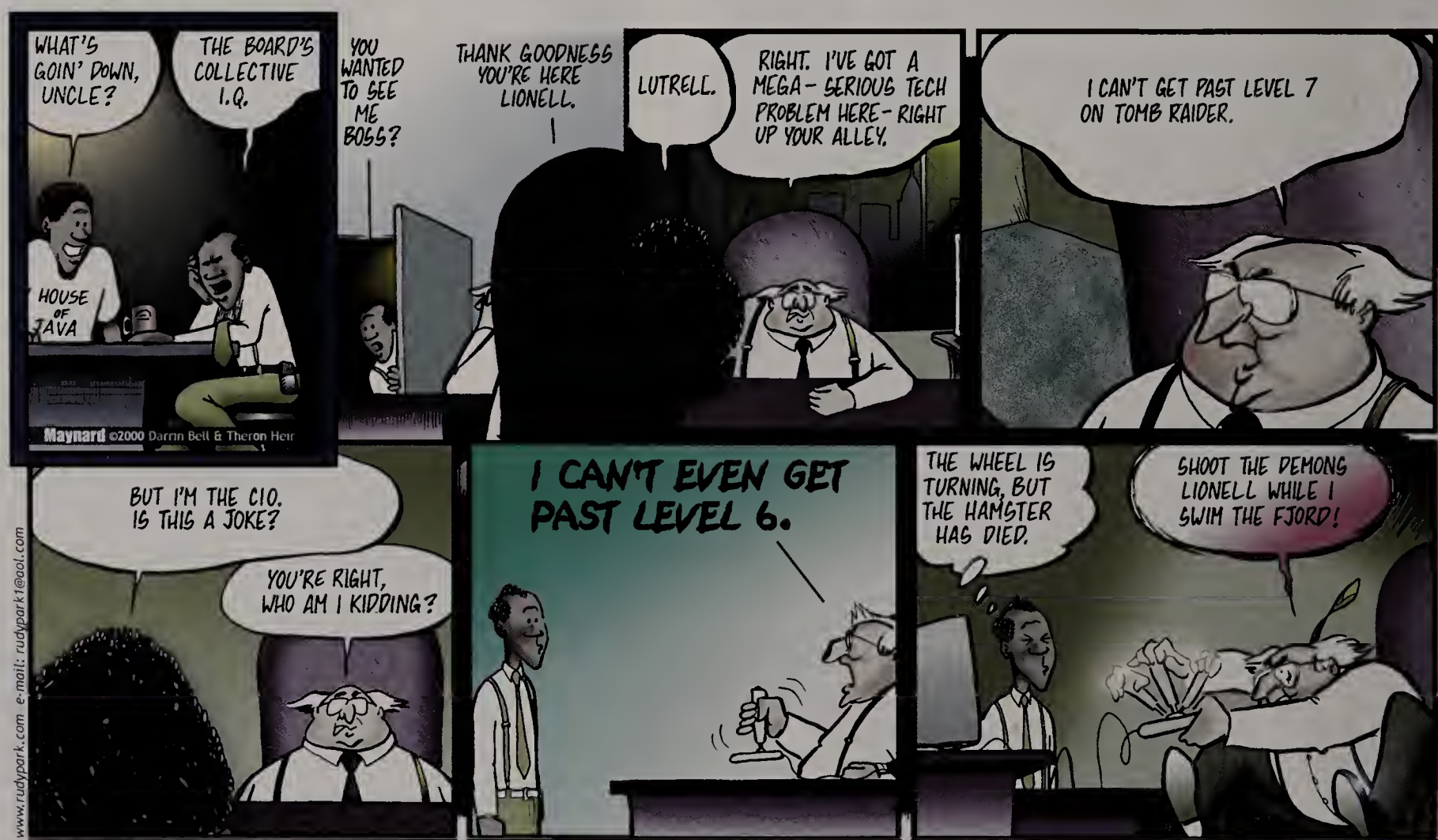
MOVERS & SHAKERS

# And A Child Shall Lead Them

**ELEVEN-YEAR-OLD** Keith Peiris was a runner-up for best web design at the Atlantic Digital Media Festival held last fall in Baddeck, Nova Scotia. Peiris was the youngest web designer to attend the event (entered by designers from all over Canada and the United States) and was recognized for his work on the Canada-Wide Science Fair 2000 website (*www.cwsf2000.org*).

When not busy with sixth grade or hockey practice, young master Peiris is president and CEO of London, Ontario-based Cyberteks Design, which he founded a year ago (with his father's guidance). He manages eight clients by himself and (according to Dad) had revenues of almost $6,000 in his first five months in operation. When asked what made him decide to become an entrepreneur at such a tender age, the enterprising Peiris responded, "Why waste the talent?" *–Meridith Levinson*

## Maynard BY DARRIN BELL

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# Washington Watch

By Tom Field

## New IT PAC Weighs In

**I.T. JUST GOT A NEW FRIEND**—and a big pocketbook—in Washington.

CapNet, pitching itself as "The Capital Region's Voice for Technology," is the first political action committee (PAC) established to help its high-tech vendor members elect technology-friendly leaders.

Chartered by the Greater Washington Technology Community, CapNet is headed by Timothy D. Hugo, former chief of staff for Rep. Bud Shuster (R-Pa.), and its member companies include heavy hitters such as America Online, IBM and Oracle.

As of early December 1999, CapNet had already raised about $100,000 in member donations, and by this spring, Hugo hopes to have $300,000 to invest in key campaigns. One battle that CapNet will likely weigh in on: Sen. Chuck Robb (D-Va.) versus George Allen. Incumbent Robb is considered one of information technology's best friends in Congress, but he faces a formidable, perhaps unbeatable opponent in Virginia's ex-Gov. Allen. Look for CapNet to flex its new-found muscle in Robb's corner.

CapNet has already started lobbying for Rep. Frank Wolf's (R-Va.) Telecommuting and Air Quality Act, which would provide incentives for businesses to encourage employee telecommuting. And the PAC is also behind new efforts to increase (yet again) the nation's quota for H-1B work visas.

Stay tuned. As the races heat up, CapNet will be the PAC to watch.

## Who to Know, Where to Go in D.C.

**Rep. Stephen Horn (R-Calif.)** This California Republican was wise to Y2K before it was fashionable. As head of the House Government Reform Management, Information and Technology Subcommittee, Horn issued quarterly report cards grading federal agencies' Y2K mitigation efforts. Now, post-Y2K, Horn is making noise about the nation's ability to protect IT resources from terrorist attack.

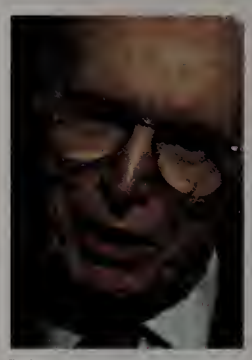
Stephen Horn

**Contact** Horn at *www.house.gov/Horn*, or call 202 226-1012.

**Rep. Edward Markey (D-Mass.)** OK, so what do the words "Massachusetts Democrat" mean to you? Liberal? Big government? Markey, a key member of the House Telecom subcommittee since 1986, helped write the House version of the landmark Telecommunications Act of 1996, which opened up competition between the Baby Bells and the long-distance service providers. Now Markey is concentrating on electronic privacy issues and, in fact, at press time was on the verge of unveiling a new Privacy Bill of Rights.

**Contact** Markey at *www.house.gov/markey*, or call 202 225-2836.

**Thomas J. Donohue, president & CEO, U.S. Chamber of Commerce** Asked to describe his organization's role in policy-making, Donohue says, "We take names and kick butt." Donohue is actively looking to involve more CIOs in his lobbying efforts.



Thomas Donohue

**Contact** Donohue at *www.uschamber.com*, or call 202 659-6000.

**Harris Miller, president, Information Technology Association of America** The ITAA is one of the most powerful IT trade associations in Washington, and front-man Miller is one of the most influential representatives of business/IT issues. A key contact for CIOs.

**Contact** Miller at *www.itaa.org* or *hmiller@itaa.org*, or call 703 284-5340.

**"America wins when government officials, from Buenos Aires to Beijing, don't use taxes and regulation to block business over the internet."**

–Rep. David Dreier (R-Calif.)

✱ Got news or views on IT issues in Washington? Send them to *washington@cio.com*.

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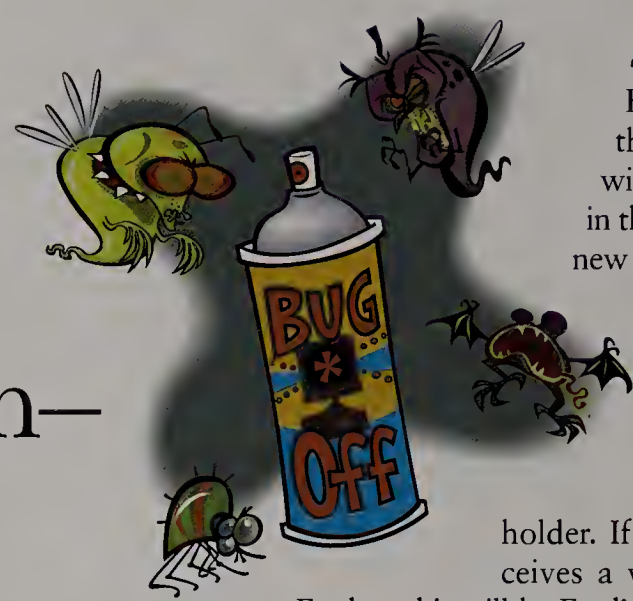
SECURITY

# The Four Commandments of Virus Prevention—Plus One

*By David Rosenbaum*




**ANTIVIRUS SOFTWARE** vendors love viruses. No viruses, no vendors. So how can we trust them when they talk about viruses?

When they tell you how you can protect yourself without their software, that's how.

These four rules are from Graham Cluley, senior technology consultant of Sophos, an Abingdon, England-based vendor of enterprisewide antivirus software.

**1. Stop using Word.doc files.**
According to Cluley, 60 percent of the viruses in circulation are written in the macros embedded in Word.doc files. RTF (rich text format) files, on the other hand, do not support macros. Cluley suggests changing your default setting to save all text as RTF. No Word.docs, no problemo.

**2. Don't boot from your A: drive.**
Boot-sector viruses account for 25 percent of the world's circulating viruses. They jump to your hard disk when you boot up with a forgotten, infected floppy in the A: drive. (You get the message "Non-system disk" and your PC becomes a virus manufacturing plant.) Cluley advises modifying the startup sequence by changing the CMOS control configuration to make the machine boot from the C:—not the A:—drive.

**3. Beware unsolicited attachments.**
But of course, you say. Well, it's one thing to say it, another to do it, especially when the attachment comes from your old pal, Fred. Cluley suggests that you make sure all your employees remember that viruses almost always come from someone you know. Of course, they also tend to have bizarre subject lines and may even be in a foreign language. Just remember that it's unlikely Fred will suddenly know how to speak Dutch.

**4. Give Fred a job.**
Hoaxes are not viruses, but they do eat up time and bandwidth as people e-mail everyone in the enterprise to watch out for a new version of "Important message from..." (the Melissa virus's calling card). There's no antihoax software and never will be. Instead, Cluley suggests appointing Fred as virus knowledge holder. If anyone in the enterprise receives a virus warning, forward it to Fred, and it will be Fred's job to assess it.

Now our addition to Cluley's list:

**5. Never turn your computer on.** Foolproof.

## Pretty *And* Smart

*By Alice Dragoon*

Ordering books or toys over the web is one thing; plunking down $3,500 for a notebook PC is another. Online computer seller Cozone.com is trying to help buyers feel better about taking the plunge by offering customized advice through a virtual sales agent named Jill.

Jill, enabled by Manchester, N.H.-based Silknet Software's eSales software, appears as a pretty face on the customer's screen and asks multiple-choice questions culled from Cozone.com's best real-life customer support reps. Want a low-end laptop or a top-of-the-line brand? Will a college student or a grade-schooler be using it? How much travel will it have to endure? A scoring mechanism runs a customer's responses against a database of product attributes including price, weight, battery life, memory and so on. Jill then recommends the top three products that most closely match the customer's needs.

"We wanted to help people feel good about making a pretty sizable purchase on the web," says Cozone.com CTO Chuck Dean. Focus groups revealed that Cozone.com's target customers—people with a working knowledge of computers—want to feel as if they are making a smart choice but don't want to become experts to do so. Jill is designed to help them research their purchases without having to surf. "Our goal was to keep the person at the site to make the buying decision," Dean says.

Jill uses layman's terms and a conversational tone. (Jill began life as Bill but underwent a sex change before her web debut, as Cozone.com decided that a female agent would speak better to women entrepreneurs, a large chunk of the site's target market.) Sales hype is kept to a minimum. "We wanted to make it feel like the customer was making the decision, not that we were guiding him or her to whatever we had in stock," explains Dean.

Jill's a pretty good saleswoman. In fact, Jill's e-mail in-box regularly includes kudos—and the occasional request for a date.

At press time, Cozone.com was planning to give Jill the ability to respond to free-form questions. As for dating, sorry, guys, she's otherwise engaged.

ILLUSTRATION BY CHUCK GONZALEZ

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THE WEB

# Everybody's in Net Biz

*By Polly Schneider*

**HOLLYWOOD AND THE** dotcoms are falling in love. The netrepreneurs and the beautiful people have discovered that they have a lot in common: Both are eager to build their brands and both are hungry to spot, or better yet be, the latest trend. Celebrities are quickly becoming sponsors, investors and even board members of both well-established and startup internet companies.

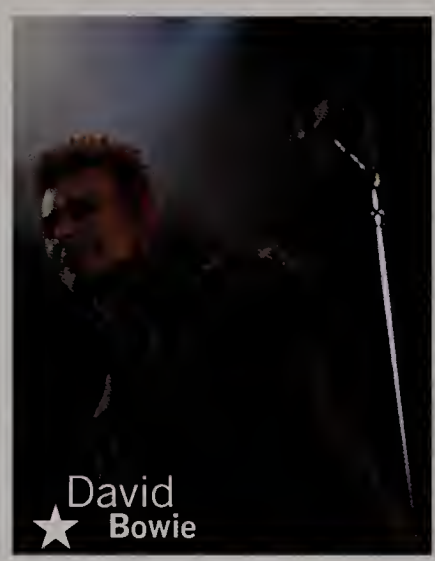
Such deals have been going on for a while, but when William Shatner signed a multi-million-dollar endorsement contract with Priceline.com in April 1998, Hollywood's heart went pitter-pat. (Reports have placed Shatner's deal at over $7 million in Priceline.com stock. Priceline.com would not confirm that number.)

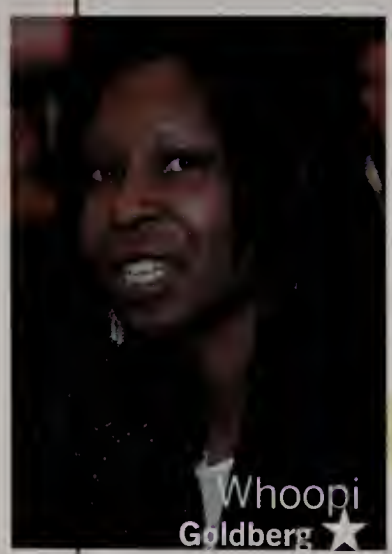
Top talent agencies are setting up deals in droves. At William Morris, agent Lisa Shotland, who's the East Coast head of the company's New Media group, says that in the last six months she's arranged meetings between internet companies and some 200 showbiz clients. "I've got 20 offers sitting on my desk right now," she says. The stars usually get paid in a cash/stock combination, Shotland says, and internet companies benefit by adding star power to their sites. But it's not just cyber-execs who are tying up Shotland's phone lines in search of famous faces; a lot of the calls come from the stars themselves. "They feel they have to be part of this new world," Shotland says.

Cindy Crawford

## Stars on the Web

**David Bowie**, rock deity: BowieNet (*www.davidbowie.com*), an internet service provider and community builder. **Relationship:** Founder.


David Bowie


Whoopi Goldberg

**Whoopi Goldberg,** actress: Flooz (*www.flooz.com*), an online gift currency service. **Relationship:** Spokeswoman and business partner.

**Buddy Hackett,** 75-year-old Borscht-belt comic: Kardz.com (*www.kardz.com*), which offers gift-plus-personalized card combinations. **Relationship:** A line of "Buddy Kardz" features his jokes.

William Shatner

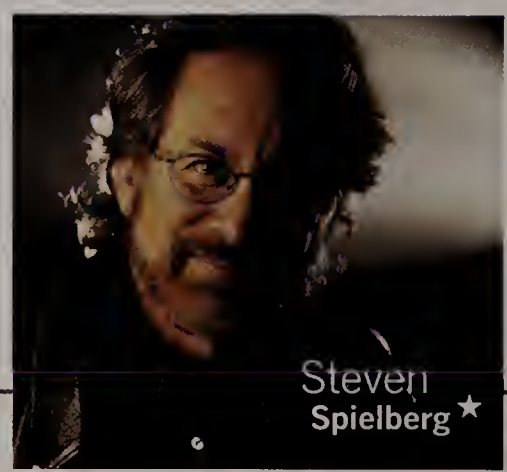
**Lee Majors,** "The Six Million Dollar Man": Kozmo.com (*www.kozmo.com*), a site where customers can order videos, music, food and more delivered to their homes. **Relationship:** Spokesman.

**George Martin,** former Beatles producer: Garageband.com (*www.garageband.com*), a site where emerging bands can post their music. **Relationship:** Chairman of the advisory board.

**Cindy Crawford,** supermodel: Babystyle (*www.babystyle.com*), a baby goods and clothing site. **Relationship:** Spokeswoman, board member, contributes periodic column.

**William Shatner,** captain, starship *Enterprise*: Priceline.com (*www.priceline.com*), a marketplace for bidding on goods and services. **Relationship:** Spokesman.

**Steven Spielberg and Ron Howard,** Midas-touch movie directors: POP.com. (*www.pop.com*), which will deliver short films, interactive video and animation online. Scheduled to debut this spring. **Relationship:** Founders.


Steven Spielberg

PHOTOS BY THE ASSOCIATED PRESS AND THE KOBOL COLLECTION

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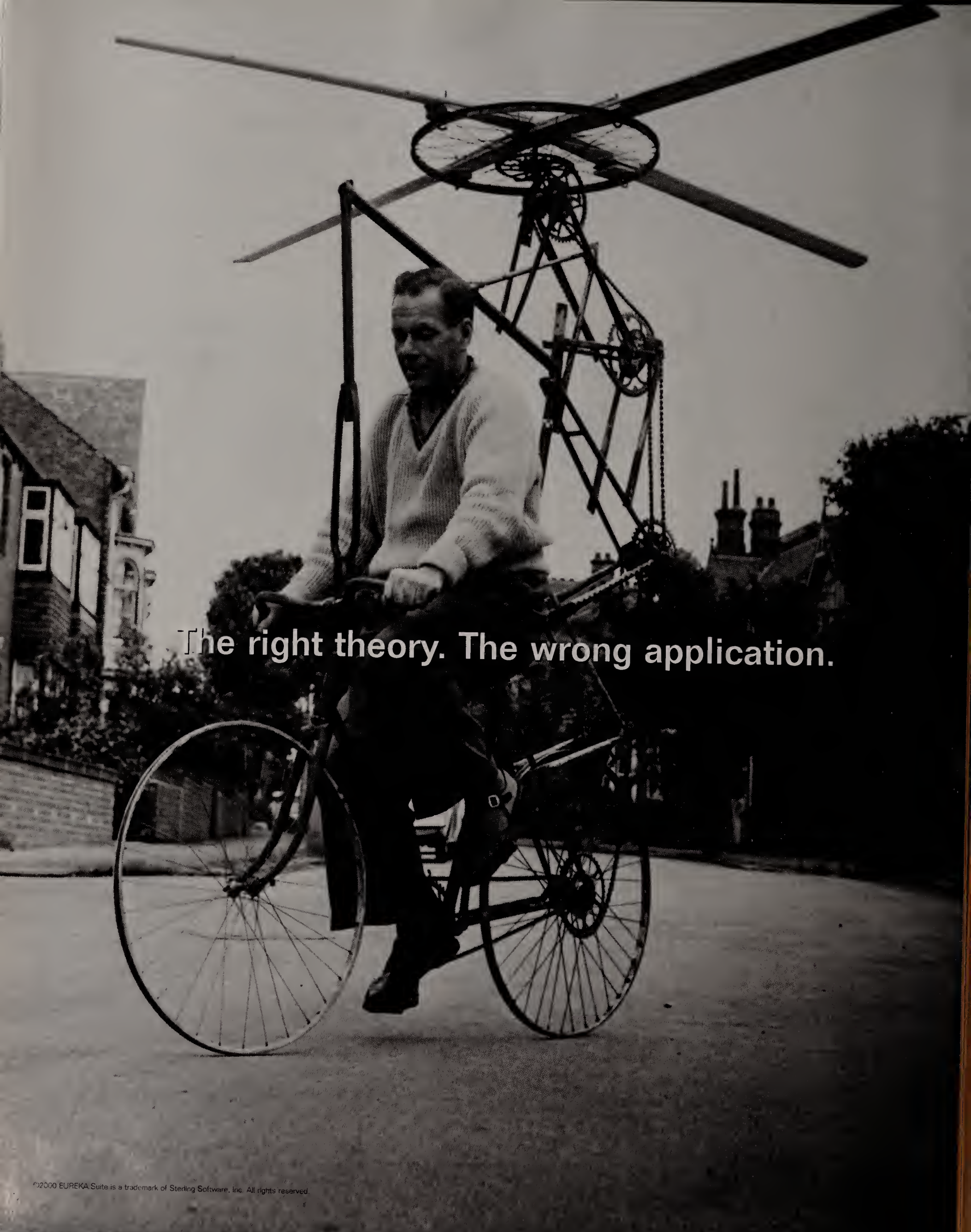


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CUSTOMER RELATIONSHIP MANAGEMENT

# Dollars to DoughNet

*By Meridith Levinson*

**FOR HER 13TH BIRTHDAY LAST JUNE,** Evergreen Park, Ill.'s Ellen Dahlke's parents set up an online bank account for her through an e-commerce site called DoughNet. They put in $50, and now when Ellen wants to buy something online from any one of DoughNet's 65 participating merchants—say the latest Backstreet Boys CD from Amazon.com or a cardigan from Delias—she simply debits her account.

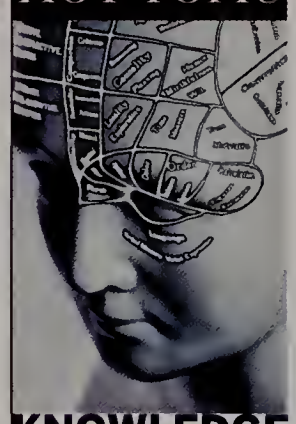
DoughNet (*www.doughnet.com*) is one of several e-commerce sites targeting teens and their wallets, including RocketCash (which claims 120,000 members) and ICanBuy (which declined to reveal its numbers), that hit the web in the spring of 1999. Kids can establish their own debit accounts or link to their loving parents' credit cards. You might ask, What parents in their right minds would allow such a thing? What about saving for college? What's the world coming to?

Well, it's not as bad as it may seem at first blush. With these sites, parents actually have more control over what their kids are buying on the net than what they buy at the mall with their friends. All these sites filter for "explicitly violent or pornographic material," so while your son or daughter could pick up *The Anarchist Cookbook* or Madonna's *Sex* in the mall, they can't get it online if they're shopping through one of these sites.

Parents can also view online summaries of how much money their children spent, what they spent it on, and where and when they spent it. With DoughNet (which says it has over 2,000 members), parents also have control over how much money is in their kid's account, how much their kid can spend on a single purchase (for example, no more than $100 on an Esprit coat) and which stores they can patronize.

Signing up at all the sites is free. Your kids will think you're the coolest mom or dad on the planet. Just don't tell them about all that Big Brother stuff.

HOT TOPIC



KNOWLEDGE MANAGEMENT

# The Buzz

*By Carol Hildebrand*

We're intrigued by the technology put out by Cambridge, Mass.-based Abuzz. But we're also a little dubious about where Abuzz is going with it.

In a nutshell, subscribers to Abuzz file a profile listing their areas of interest or expertise. So, for example, an avid gardener could register his expertise in gardening. The Abuzz software uses the profiles to connect people with questions to people with answers. What's more, it monitors subscriber exchanges and updates profiles when someone answers a question.

Here's how it might work, says Andres Rodriguez, president of Abuzz and CTO of its parent company, Times Company Digital: "Say I have a specific question about American brands of birth control pills. I would create a mini-message board around that, and the profiling system would scan the profiles and send invites to the dozen or so people who could answer the question, creating a tiny forum. Those individuals can accept or decline the invitation, and the system then learns from that."

By matching specific people to talk about specific questions, Abuzz avoids "squashing all conversations about one topic into an overly large discussion group," a common problem with groupware, says Rodriguez.

An ongoing, self-updating system, Abuzz has the potential to track intellectual capital throughout a company. Seamlessly. The possibilities are great for any large corporation struggling to codify and list internal experts.

Which is why the direction Rodriguez wants to take the technology is so problematic. Abuzz wants to amass a large amount of expertise at its site, *www.abuzz.com*, with a goal of attracting 2 million different subscribers by the end of 2000. "We're trying to build a social experience on a scale that hasn't been approached before," he says. The site contains 31 different content silos, he says, and plays host to a vibrant collaborative community.

But why go the community route rather than sell to corporations? Communities have been around on the web for a long time, with mixed results. Abuzz needs a critical mass of participants to succeed, and it's hard to imagine that happening without some incentives to attract those 2 million. Not impossible; just hard.

(For additional information on e-mail-based knowledge management technologies, see "Getting to Know You," Page 150.)

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# Off the Shelf

Edited by Carol Zarrow

## The Inventor as Monster

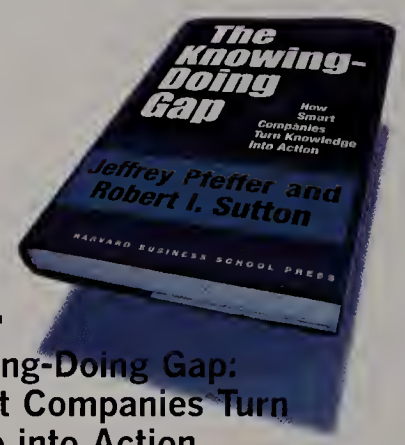
**The New New Thing: A Silicon Valley Story**
By Michael Lewis
*W.W. Norton & Co., 1999, $25.95*

Does truth reside in the dancer or the dance? Michael Lewis's *The New New Thing* focuses on the dancer, Jim Clark. In this slick, magazine-style profile, the creator of the Geometry Chip, the founder of Silicon Graphics, the force behind Netscape, the man who gave us Healtheon, is presented as both a genius and a jerk. In Lewis's view, it is precisely because Clark is uncomfortable in the world that he is driven to create new ones. And the world enables his whims and outrages because for the last two decades the surest way to get rich has been to follow Clark wherever his impulses lead him.

Perhaps technological advances have always been driven by ego and greed, but the Valley world that Lewis limns—full of sycophantic venture capitalists, dim-witted managers and alienated engineers, all held in thrall to Clark's agitated depressions and devouring neuroses—is particularly distasteful. *The New New Thing* holds the reader like a wreck holds gawkers on the highway.

*–David Rosenbaum*

## Also...




**The Knowing-Doing Gap: How Smart Companies Turn Knowledge into Action**
By Jeffrey Pfeffer and Robert I. Sutton
*Harvard Business School Press, 2000, $27.50*

Companies pour billions of dollars into acquiring knowledge, but most of that money is wasted, according to the authors of *The Knowing-Doing Gap*, because of the disconnect in corporate America between knowing what ought to be done and actually doing it. The book's eight-point plan can help companies move from just talking the talk to actually walking the walk. Of course, even this book could end up on a dusty shelf of unused how-to's. After all, a call to action is a very different thing from action itself.

*–Carol Hildebrand*

## *CIO* Best Seller List

5.
***First, Break All the Rules: What the World's Greatest Managers Do Differently***
by Marcus Buckingham and Curt Coffman
**Simon & Schuster, 1999**

4.
***Customers.Com: How to Create a Profitable Business Strategy for the Internet and Beyond***
by Patricia B. Seybold
**Times Books, 1998**

3.
***The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail***
by Clayton M. Christensen
**Harvard Business School Press, 1997**

2.
***Who Moved My Cheese? An Amazing Way to Deal with Change in Your Work and in Your Life***
by Spencer Johnson
**Putnam Publishing Group, 1998**

1.
***The New New Thing***
by Michael Lewis
**W.W. Norton, 1999**

SOURCE: December 1999 data, compiled by Amazon.com

**TELL US what you're reading and why at *books@cio.com***

## *What They're Reading*

**John Puckett, CIO, Toysmart.com, Waltham, Mass.** *The New Rational Manager*, by Charles Kepner and Benjamin Tregoe (Princeton Research Press, 1997) "I think it's a must for every CIO and IT team. It's like learning how to read music and bringing together an orchestra to play a symphony. The methodologies work and the results can be astonishing! Highly recommended."

**Brian Feucht, CIO, Hire Quality Inc., Chicago** *Patton on Leadership: Strategic Lessons for Corporate Warfare*, by Alan Axelrod (Prentice Hall Inc., 1999) "This book summarizes the best military tactics and applies them to business relationships. A real page-turner, hard to put it down."

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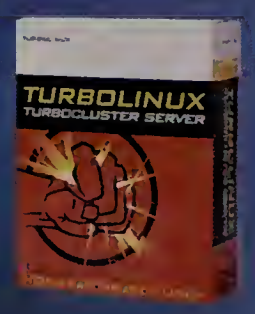


IBM Dell Hewlett-Packard Compaq NEC Fujitsu Hitachi Gateway

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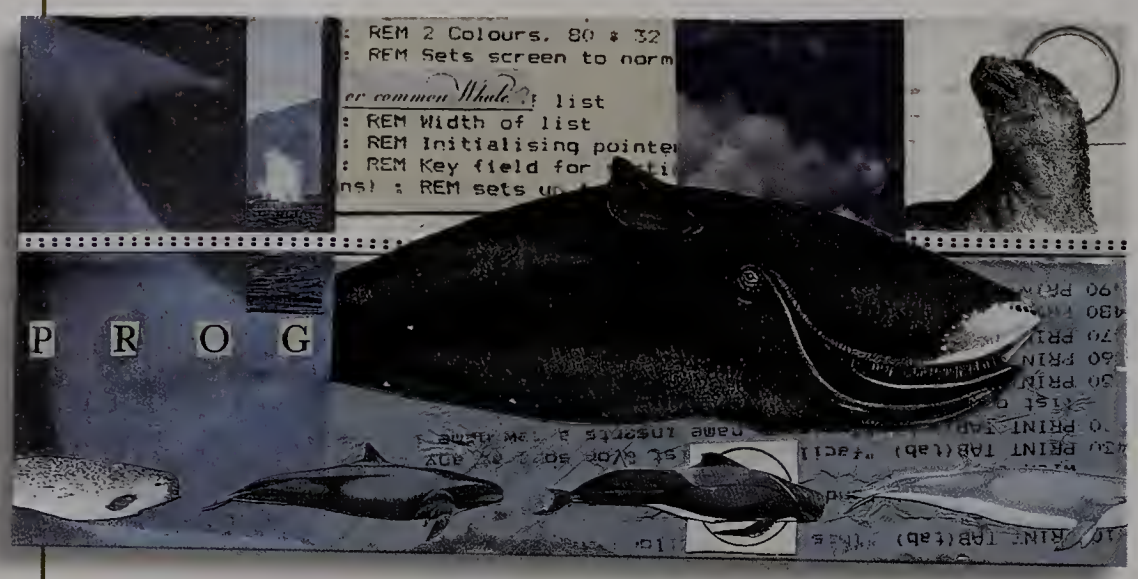


APPLICATIONS

# Moby Data

**MARINE BIOLOGISTS WHO STUDY WHALES** and dolphins aren't big on computers. At sea for months at a time, the wind in their hair and the salt spray on their laptops, they record much of their data by hand, noting every time a whale surfaces, slaps its flukes or pairs up with a pal. The process is tedious...and essential.

Perhaps that's why some biologists are raving about SOCPROG, a series of data-mining programs that analyze animals' social structure, populations and movements. Written by Hal Whitehead, a Canadian biologist who studies sperm whales and northern bottlenose whales, SOCPROG comes into play after the researchers have entered their field notes into a computer. Unlike off-the-shelf data mining programs, which do not allow scientists to readily correlate observations from different times and places, SOCPROG organizes and analyzes the data on individual animals. Over time, the program can, for example, flag a whale that always surfaces first, thereby spotting a pod's leader.

A self-proclaimed computer geek, Whitehead, a professor of biology at Dalhousie University in Halifax, Nova Scotia, released the latest update of SOCPROG early last year. Since then, Whitehead says, it has been downloaded (*is.dal.ca/~whitelab/index.htm*) for free by more than 40 scientists around the world.

Robin Baird, a Hawaii-based post-doctoral fellow at Dalhousie who studies killer whales and dolphins, says SOCPROG has enabled him to identify patterns of behavior never noted before. He recently discovered a subspecies of killer whale, for example, that eats other small whales and dolphins, too. "[SOCPROG] allows people who don't have a programming background to do very sophisticated analyses relatively easily," Baird says.

If Captain Ahab had had SOCPROG, perhaps Moby Dick would not have taken him unawares.

*–Matt Villano*

PROGRAMMING

# Can You Say OOP?

**HERE'S A STORY** making the rounds:

Australian Air Force programmers were recently asked to include kangaroos in their virtual reality flight simulations because fleeing herds of skittish 'roos can give away helicopter positions. The programmers, in order to save time and money, simply took the code used to model infantry detachment reactions to choppers flying overhead, changed the icon from a soldier to a kangaroo, and increased the speed of movement.

But when pilots first buzzed the virtual kangaroos in flight simulation exercises, they were shocked to see that after they scattered, the kangaroos "launched a barrage of Stinger missiles." The programmers had forgotten to remove that part of the infantry coding.

The moral, according to the Australian Defense Science and Technology Organization's report on the incident? Be careful about reusing object-oriented code.

Since then, the report concludes, pilots flying simulations have taken great pains to avoid the heavily armed marsupials.

*–David Rosenbaum*

LITTLE SCARY NUMBER

**"There is now one computer chip for each person on the planet."**

–Ron Griffin, CIO, The Home Depot, speaking at the Society for Information Management Conference in Atlanta last fall

ILLUSTRATION LEFT BY NICKY ACKLAND SNOW; RIGHT BY CHUCK GONZALEZ

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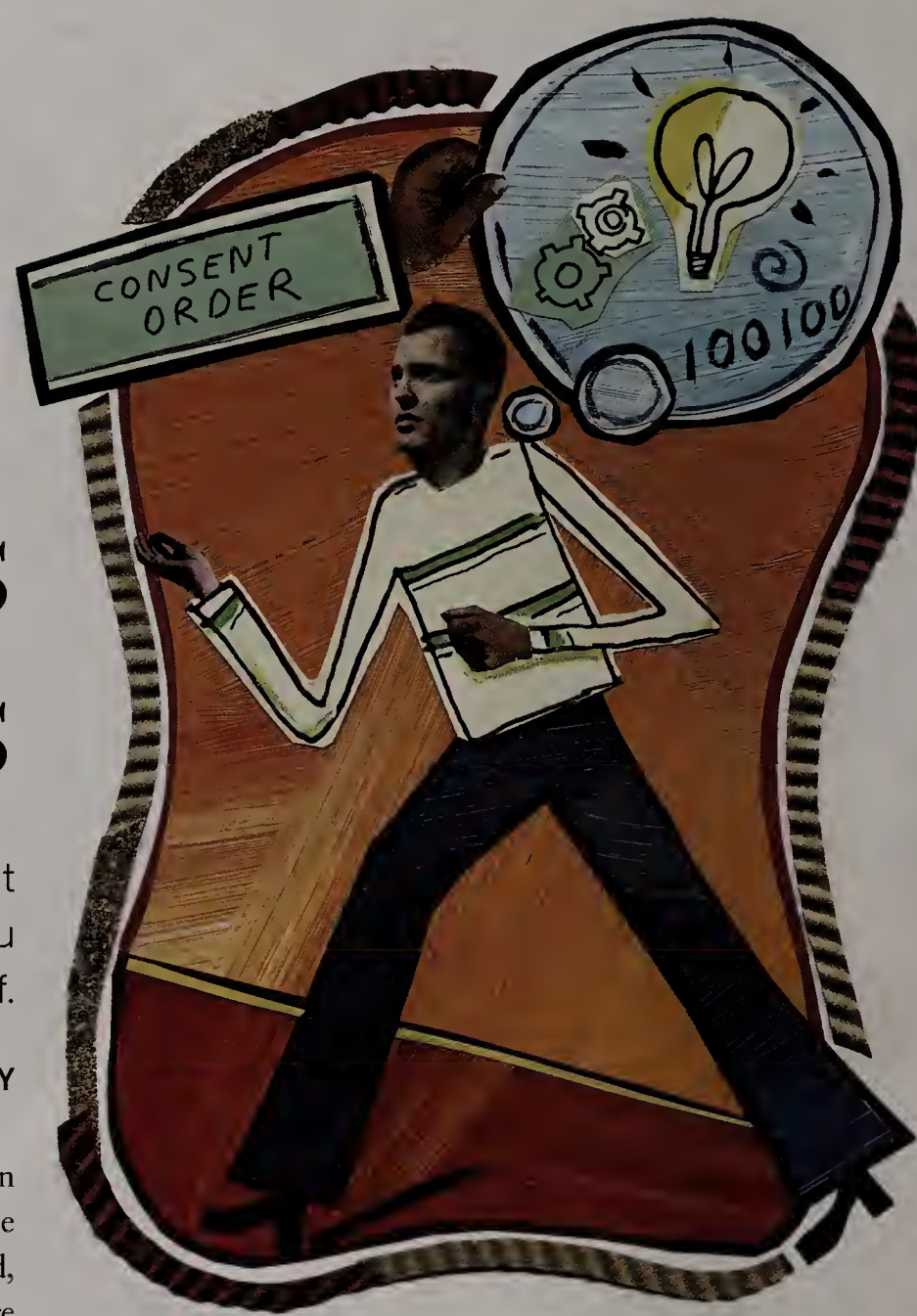


# Dangerous Liaisons

When your employees move on, they don't leave their knowledge behind. Here's what you should know to protect yourself.

**BY EDWARD W. GRAY**

**MORE AND MORE OFTEN,** employers ask courts to place limits on the future employment of their departing workers. These employees are potentially dangerous—if not properly handled, they can seriously harm the organizations with which they are associated. Courts, however, are loath to make rulings restricting people's rights to work where they can and want to.

We've seen this in some famous disputes. In *General Motors v. Lopez,* despite evidence of theft of trade secrets, GM was unable to stop Volkswagen of America from hiring its purchasing czar. In another more recent case, *Wal-Mart v. Amazon.com,* Wal-Mart lost several key inventory-management specialists to Amazon.com. In 1999 Nike filed suit against its former CIO, who left for The Gap. So what should you do to keep such dangers from your door?

Trying to legally limit the move of an employee will rarely be worth the risk of exposing confidential information at a public hearing. Because that is precisely what may be required during a request for a preliminary or a permanent injunction. In one of the few cases reported thus far under The Economic Espionage Act of 1996, *U.S. v. Hsu,* the federal district court ordered plaintiffs to provide the defendants with the very trade secrets that the defendants were accused of stealing. The court said the defendants needed the details in order to prove that the asserted trade secrets could be found in the public domain. You can imagine the reluctance of the plaintiffs to give further secret information to people they already believed to be thieves. This explains why few such cases are brought.

Once you learn of an employee's impending departure, it is often too late to prevent it. If you suspect any infringement of confidentiality, you probably don't want to keep the employee anyway. But parties should agree at the time of hiring how they will conduct themselves in the event of a dispute. Sometimes only the threat of litigation can drive the parties to agreement on a sensible plan for moving forward with their lives, goals and objectives. This is best embodied in a court-approved document called a consent order. To clarify what your goals

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should be in negotiating a consent order, let's review the rights and duties of the parties to the dispute.

### Your Rights and Duties

Having well-drafted contracts with employees in advance of a problem is key to obtaining the best possible result in court. In addition, assess how likely it is that the employee will live up to his or her obligations. Interview the employee as soon as you learn of an impending move. Find out about the nature of the new assignment, what the job duties will be and how closely they relate to that employee's job with you. If your departing employee has a good reputation for truthfulness, you will trust him or her to maintain your confidences. That's not the case for a sneak or a cheat. Past examples of dishonesty and clandestine conduct will tip the balance in your favor should the case end up in court. Pay particular attention to whether the employee has copied or removed information from the workplace. Nearly all courts are sympathetic to the notion that an employee must not unnecessarily harm the legitimate interests of the employer he or she is leaving.

**The general view is that employees own whatever knowledge, skill or experience they have developed.**

But what about preventing the employee's *use* of such information even if it is not actually disclosed? It will be exceedingly difficult to control the use of information that is not in tangible form or formally protected as a trade secret, patent or copyright. In the absence of a written noncompetition agreement, you are in a very weak position to get effective relief if an employee moves. The courts are almost unanimous in refusing to prohibit the movement of the employee or the employee's right to use his or her knowledge even in closely related activities.

### The New Relationship

Companies are of course free to compete vigorously against one another. As long as the competition does not benefit from the misappropriation of your trade, it faces little liability simply from hiring your employee. Still, that employer must take care to determine that indeed it gains no benefit from your company's confidential information as a result of hiring your former employee. They must carefully review the employee's obligations to you before they hire, particularly when they are direct competitors or when the employee is hired to function at a very senior level. All employers ought to understand that the shoe could easily be on the other foot and behave toward other companies as they would like to be treated. Besides, if they don't take these precautions, their case will be weaker in court.

When a company tries to restrain an employee from accepting new employment or to assign an employee's invention to itself, the court must balance the relief requested by the employer against the impact on the employee. The general view is that employees own whatever knowledge, skill or experience they have developed. An employee is free to use that knowledge and skill in future endeavors, even to compete against the employer. Even when you have contracted with the employee respecting such matters, the courts go to great lengths to avoid placing undue hardships on a person's employability.

While the concept of undue hardship varies most jurisdictions won't enforce a noncompete agreement for more than one year, or an invention assignment for more than 12 months after the employee leaves. State courts most favorable to employees' rights include California, Michigan, North Carolina, Minnesota and Washington. These states have statutory limits on the extent to which an employer can impose contractual limits on employees' rights to take whatever knowledge and skill they possess to a new employer.

### The Antidote

Seek a consent order that assures that information possessed by an employee will no longer be current when it benefits his or her new employer. Since the employee in most cases will be permitted to move, a consent order should focus on specific commitments that restrict him or her from communicating directly with parts of the new workplace that would benefit most from your confidential information. It is usually sufficient if, for a limited period of time, the employee's work requires different skills and knowledge than was important during his or her work for you. Courts will generally enforce such a restriction for six months to two years depending on the agreements to which the employee is obligated and the effect on his or her employability. The consent order should require an officer of the hiring company, such as the general counsel, to certify every few months that the employee is abiding by the restriction.

In the absence of a written agreement, employers have few legal safeguards assuring the confidentiality of information lawfully in the possession of an employee. However, if a dispute arises, it is always more easily resolved when proper agreements are entered into on hiring. Challenge your legal and human resource professionals to give you contract tools and training to reduce or eliminate disputes over employee movements to competitors. CIO

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Edward W. Gray Jr. is a partner at the law firm of Fitch, Even, Tabin & Flannery in Washington, D.C. Send your thoughts or ideas on legal matters to *fineprint@cio.com*.

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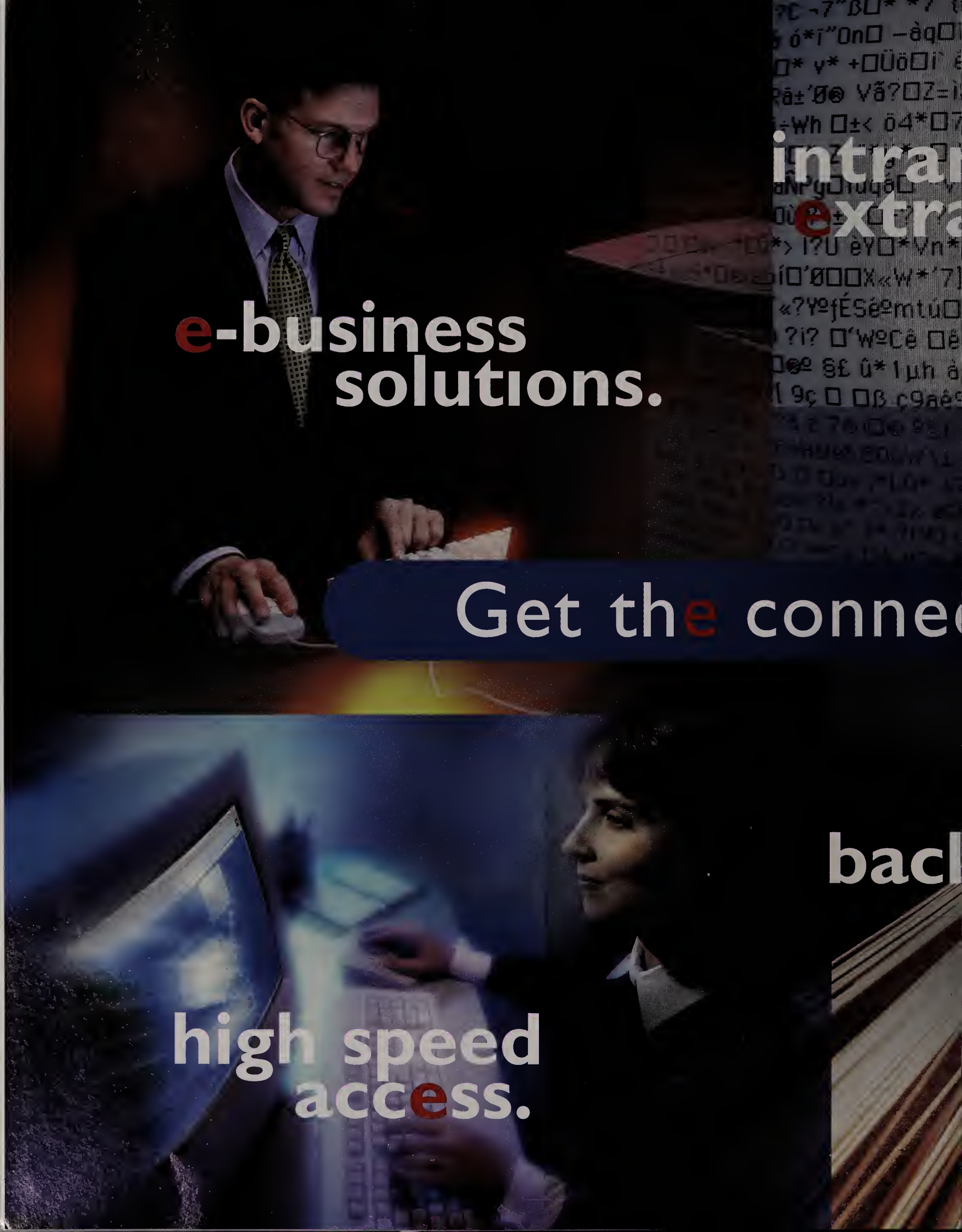
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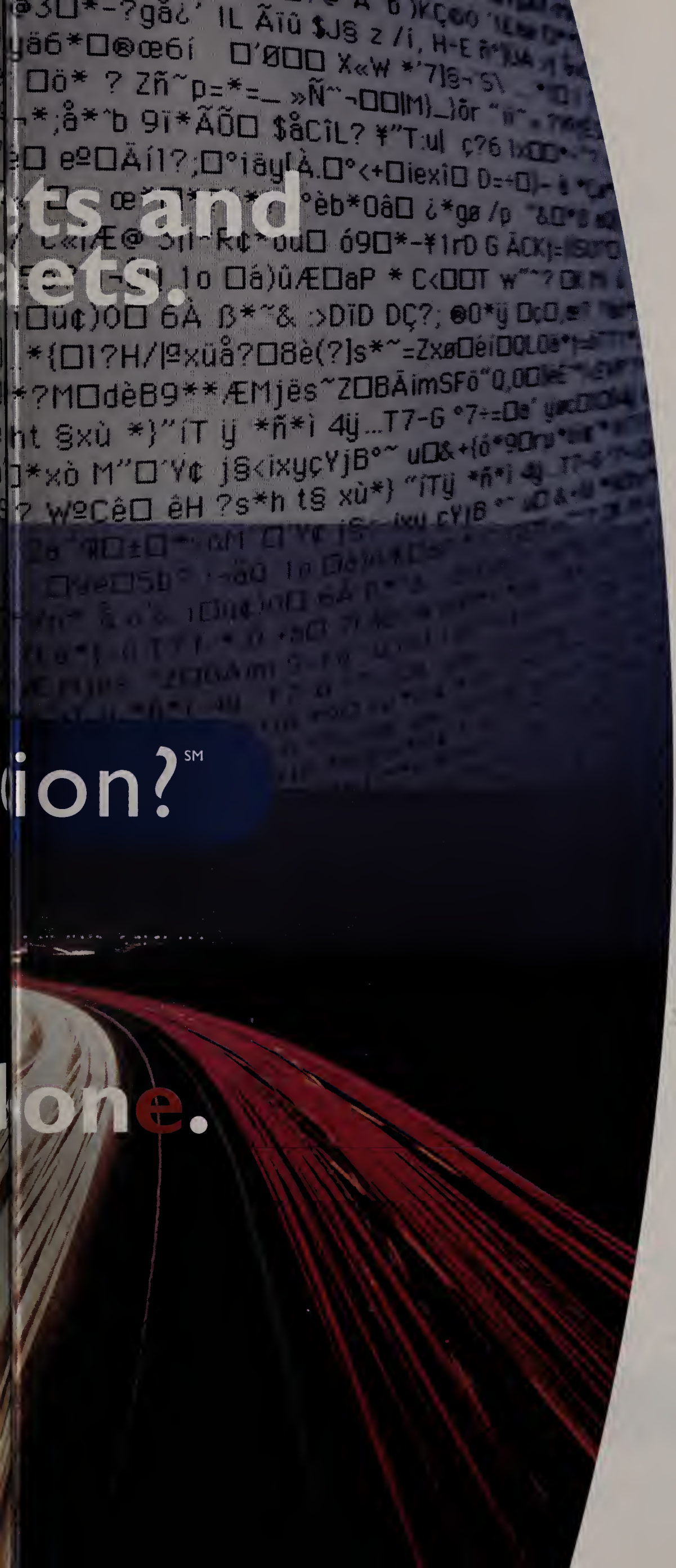


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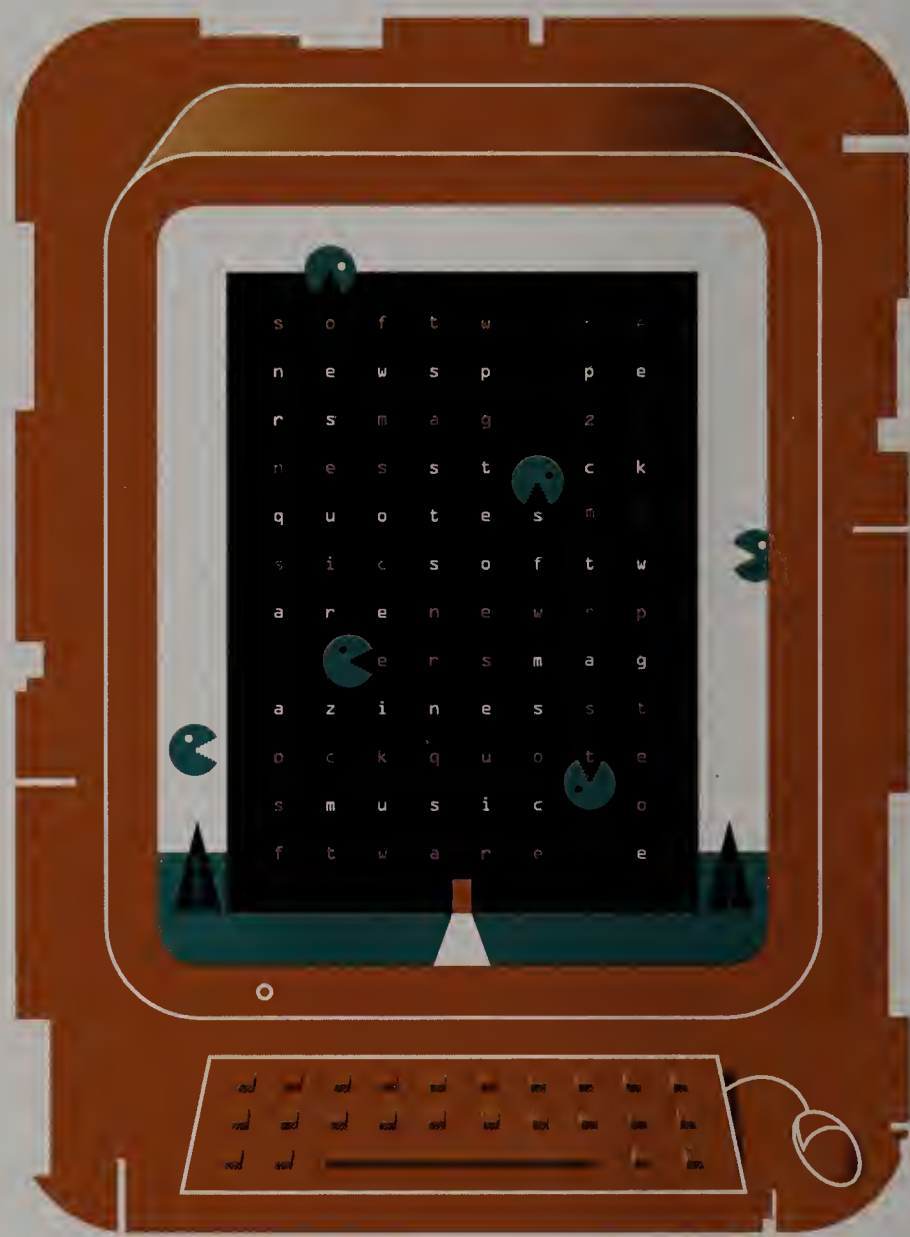
# An Unevenly Distributed Future



If your company sells information of any type, get ready to change.

**JEFFREY F. RAYPORT**

**THE INTERNET MAY YET CHANGE EVERYTHING,** but the rate of change will differ wildly among industries. For some businesses the future has arrived, while for others it's still a theoretical possibility hovering on a distant horizon.

Understanding whether this unevenly distributed revolution has arrived in your business—and how much dislocation it will create—is crucial. After all, you must time information technology investments with actual market-driven needs, and a CIO's leadership in any business depends on placing those technology bets correctly.

There are good reasons why some industries will be turned upside down by the internet and others will not, and they relate directly to the resource that the internet distributes—namely, information. When it comes to the impact of digital technology, there is a bright line between those sectors that create value through distribution of information-based goods and those that create value through distribution of physical goods.

I am not suggesting that we merely draw the line between goods and services. There are plenty of physical goods that exist merely to distribute information—such as books, compact discs, computer software, magazines, newspapers and videocassettes. And there are many services—such as accounting, engineering, management consulting or legal advice—that rely on delivering bundles of information to customers as the key sources of value.

For now, these are the companies feeling the heat, because the internet is creating powerful new channels for the delivery of information. For example, I could start a website today (with free storage space and page design templates, courtesy of my internet service provider) and describe to you the contents of this issue of *CIO*. If I do an acceptable job, my description would provide you with some equivalent of the knowledge and insight you could have gleaned from the magazine itself.

Similarly, I could report advice from your lawyer about a legal issue important to you and, if you find my account credible, I might serve as a fair substitute for the lawyer herself.

ILLUSTRATION BY LEO ESPINOSA

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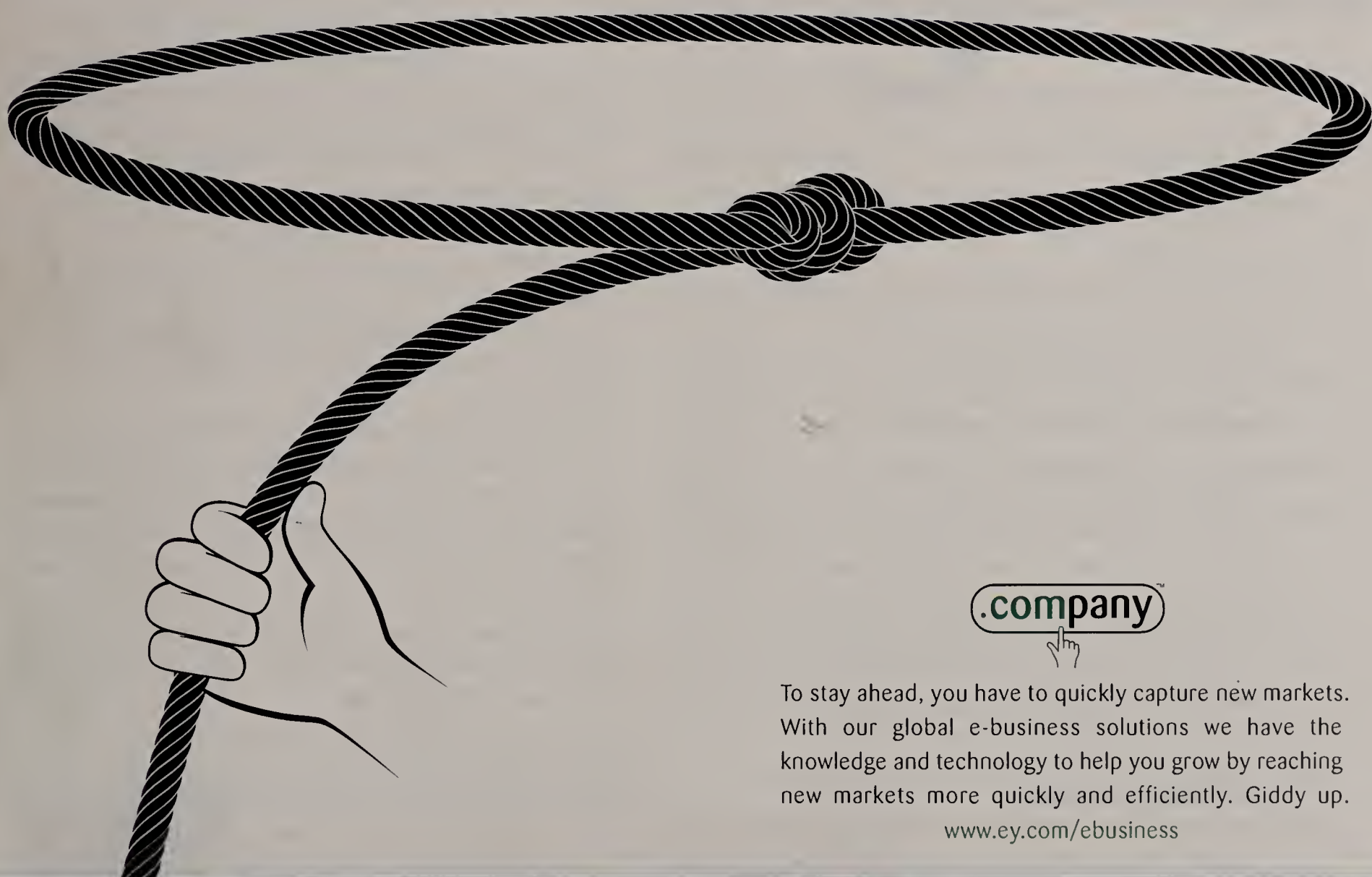

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In contrast, any description I might give you of the chairs you want for your living room or your favorite toothbrush cannot substitute for the real things. Since you cannot brush with a description of a toothbrush, the manufacturing of toothbrushes will continue for some time to come. But since you can check stock quotes, sports scores and weather in continuous streams on your PC desktop or cable TV screen, newspapers, magazines and network TV have lost some of their greatest draws.

### Facing the Music

To fully gauge the depth and swiftness of changes happening in information-based industries, consider the music industry. The contents of practically every music CD ever published have been posted as MP3 files on the internet by music fans for others to download free of charge. The music industry is fighting back, with a variety of attempts to copy-protect future CDs, but that doesn't change the fact that every Tower Records in the world is a bank where the doors to the vault have been left unlocked. Why? Because not a bit of the music available today for purchase is copy-protected. And it's all in digital formats already—making each compact disc the near equivalent of a master tape.

**Every Tower Records in the world is a bank where the doors to the vault have been left unlocked.**

Is it possible that a $40 billion global industry is up for grabs? The truth is that most of the sector's revenues are derived directly from the production, packaging, distribution, and retail promotion and sale of physical CDs, and indirectly from the underlying music content. If revenues and profits are associated with production of the physical box, or cache, that holds the music, but customer value is derived from the musical content, what does the business become in a world where consumers have ubiquitous access to music through internet sites and services? The question is particularly relevant for the music industry's most important audience—young people in high school and college—who have fast network connections on many campuses, ready access to computing facilities and high levels of comfort with technology.

### Fine Young Cannibals

If it seems at first blush that the troubles of executives at companies like Arista and Def Jam are a peculiar example for mainstream business, think again. You might be better off regarding the recorded music industry as a cautionary tale for any business that creates value through information—like software distribution. The substitution of digital downloads for the mountains of diskettes and boxes that software retailers put on shelves was one of the factors that caused Egghead Discount Software, a 250-unit chain of retail stores, to pull the plug on its brick-and-mortar outlets and move its entire business to the web (*www.egghead.com*). And digital downloads of research reports from Cambridge, Mass.-based Forrester Research's website have largely put an end to its high-volume offset printing jobs. Instead, Forrester offers its clients Adobe Acrobat files accessible online.

It's this same substitution phenomenon that has created a market for downloading books into handheld devices like NuvoMedia's Rocket eBook and SoftBook Press's Softbook and downloading datebooks and Rolodexes into Palm and Psion handheld organizers; not to mention downloading medical test results from your physician through web pages hosted by Healtheon/WebMD Corp. Every download represents a cannibalization of a physical good or service—and a threat to any business that depends on rendering those goods or services to customers through physical channels.

Businesses in the internet economy need ways to fend off these threats. They must determine how new channels of distribution will support customer relationships, and they must figure out how the underlying economics of their businesses will change with the coming shifts from physical to network-based distribution. Without a doubt, every business—even the toothbrush companies—will sell products and services differently as they manage relationships with customers in new ways. Only certain businesses will need to rethink the ways they configure actual products and services. For them, the future is arriving fast, furious and now.

In planning for this unevenly distributed future, ask yourself several related questions: Does your business sell products and services that deliver value through information-based or physical means? If information-based, have you made adequate investments in the kinds of technologies that will ensure continued success in the future? And are you prepared for a time in which much, if not all, of what can become digital will be? Only by examining these issues can a CIO chart the technology future of a business. CIO

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Jeffrey F. Rayport, a faculty member on leave from the Harvard Business School, heads the Monitor Marketspace Center, a research, media and consulting unit of Monitor Group, the Cambridge, Mass.-based strategy consulting firm. Do you think your information-based company will withstand the onslaught of the internet? Tell Rayport at *neweconomy@cio.com*.

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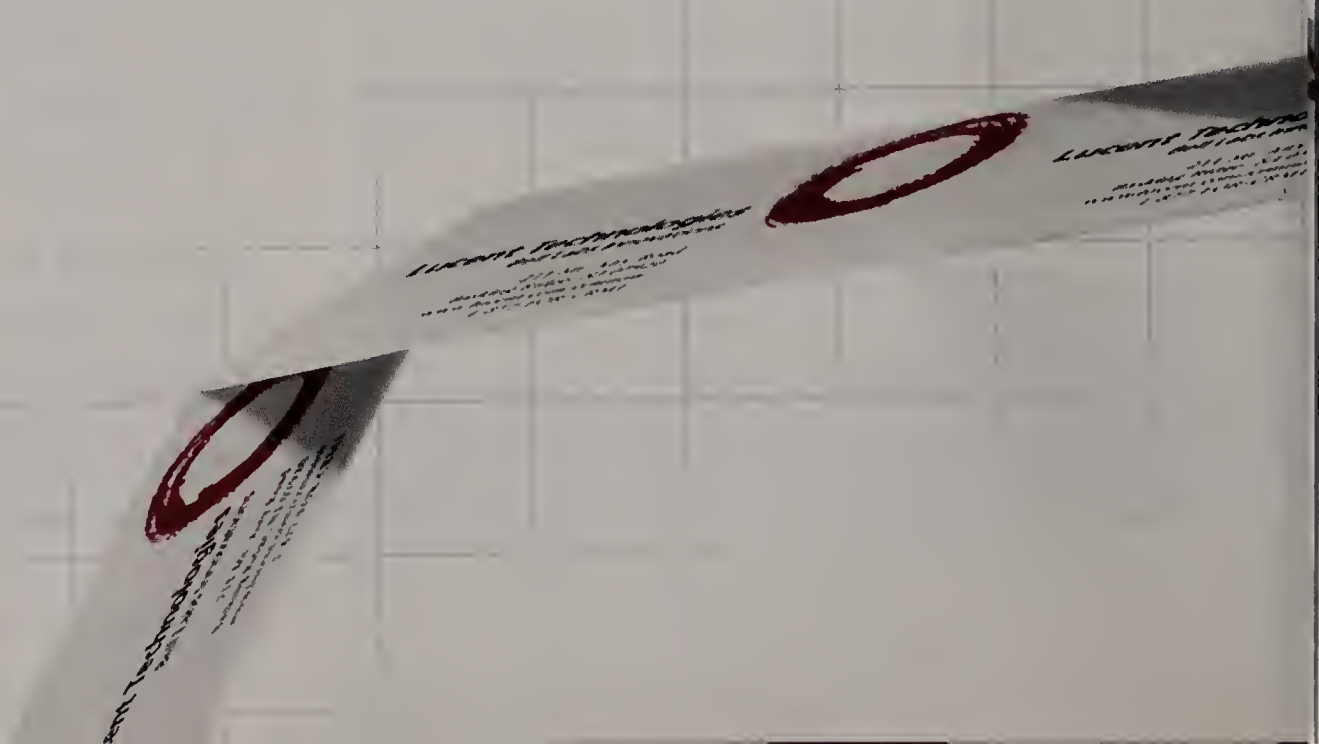

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# Another Trip to Hell

*You loved it when we told you IT horror stories a year ago. Now, want to hear something really scary?*

BY POLLY SCHNEIDER

The timing for a project blowup could not have been worse. In the summer of 1999, Hershey Foods suffered a glitch in a $112 million new enterprise system built to automate and track every step of the company's candy-selling business. Just days before Halloween the problem was still unresolved, and business took a scary turn for the $4.4 billion candy-maker. The lost orders, missed shipments and disgruntled customers that resulted from the company's systems woes were well publicized in both the trade and business press. While Hershey would not reveal its losses from the glitch, third-quarter revenues were down $151 million from 1998.

What happened to Hershey can happen to any company, any time of the year. Unexpected changes in management or business direction, or the loss of key staff members, can send high-profile projects into a tailspin. Many problems are preventable, and yet the same ones seem to crop up time and again. The horror stories below tell of out-of-control consultants, project managers who've never managed an IT project before and sponsors who disappear until the product is finished and then report that it's

ILLUSTRATIONS BY JAMES YANG

absolutely nothing like what they had in mind.

CIOs can minimize the risk by clearly defining leadership roles, getting commitment of sponsors from the business and securing executive support and participation. Other steps are less obvious. Not all of the CIOs who agreed to share their stories felt comfortable disclosing their companies' names or their identities. However, the lessons they've painfully learned have helped them become better leaders today.

## THe SCouRGe oF ISoLaTioN

*If you suspect IT is working in a vacuum with no help from the business sponsor, pull the plug—lest you care to witness 11th-hour scope creep.*

### The Project

In 1995, Omni Hotels, a small, struggling hotel chain based in Hampton, N.H., decided a snazzy guest recognition system would boost customer loyalty and drive repeat sales. Omni's executive team, desperate to improve the company's lackluster performance, pinned the company's financial future on the project. Hotel employees would reward repeat guests with gifts or room upgrades as they checked in and note guest preferences for future visits and promotions. The marketing department happily promoted the loyalty program to customers and hotel managers, but, when the system went live a month behind schedule, the hotels hated it: It had little business value, was difficult to use and ran slow as molasses. "It was a joke," says Thomas Murphy, CIO at Royal Caribbean Cruises in Miami, who was Omni's vice president of IT at the time. The system was yanked just six months later.

### The Problem

Early on, Murphy tried in vain to get the company's vice presidents in one room to define the system requirements. The executives couldn't be bothered with the details, however, and sent their underlings instead. When IT presented a demo to the business units, all hell broke loose. Managers from marketing, sales and operations began fighting over functionality. Lacking input from the business units, the system had been designed without any rules for granting the rewards. No one could agree on when and how guests would receive gifts. The hotel managers—who had never been consulted about the project—were hardly thrilled about making room in their budgets for bottles of wine and other pricey gifts. Worse, the marketing department had kept the CEO in the dark from day one. "When we sat down, his expectations were wildly different than what was being developed," Murphy recalls. "That was a gut-churning moment."

Murphy admits that the lack of a business sponsor was the ultimate oversight. The business units couldn't decide among themselves what they wanted, the CEO had a grandiose vision of a dynamic system that would never happen in the allotted time frame, and the hotel managers who had to implement the program wanted nothing to do with the whole mess. Politically, it was impossible to pull the plug—yet deep down, Murphy knew the system was going to be a sham.

Murphy and his team raced back to the drawing board and spent a month frantically reengineering the system in an attempt to placate the various warring parties and meet the CEO's desire to get the application up and running ASAP. The laundry list of requirements included ease of use, speed, improved reporting capability and interfaces to other legacy systems—among other surprise requests. Oh, and make it sexy, they added. On top of that, there were drastic technical problems to address. The software had been developed on a Microsoft Access database rather than on a relational database, which could have scaled to the requirements of Omni's 40 hotels. Further, users had to access the software through sluggish dial-up networking since Omni did not yet have a wide area network installed. Updating the database each morning tied up a PC at the front desk for an hour. Finally, no formal training or documentation was provided to the hotels. First-time CIO Murphy candidly admits, "My relative inexperience certainly did not help the situation."

### The Recovery

There was none, and the company lost $250,000 in the process. Murphy says the failed project succeeded only in further exacerbating internal conflicts between business units that had been brewing for some time. Years of turnover in senior management had created a rift between long-term Omni middle managers and the autocratic executive team. Not long after the system went live, TRT Holdings of Irving, Texas, acquired Omni, and Murphy decided not to join the new company.

### Heavenly Hindsight

**1. Sponsor, sponsor, sponsor!** And it's not enough just to assign the role—CIOs have to be sure of commitment. Eventually, Omni's VP of Rooms Operations became the official business sponsor, but Murphy says his travel schedule kept him out of the office most of the time.

**2. Insist on a well-defined scope.** Require par-

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#3

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ticipation from business sponsors and users—even for the mundane technical details. "The business did not want to hear about technical challenges," Murphy says, remembering that the reigning attitude was that IT ought to be able to make anything work.

**3. Do your infrastructure homework.** Will your network and databases support current and future demand and usage patterns for the system you're building? Do whatever you can to assess the situation, even if it means bringing in a consultant from the outside.

**4. Choose technology, not skills.** If you don't have the right skills for the project, hire them. Murphy admits that he used Microsoft technology simply because those were the skills he had on staff.

## THe CoNSuLTaNT aS RoCK STaR

*Pity the company that lets a star consultant take over. Like good government, every project needs a system of checks and balances.*

### The Project

Big egos are no big deal in Hollywood, yet one studio didn't foresee the consequences of allowing an egomaniacal consultant to control a royalty project. The bread-and-butter accounting package in music studios, a royalty system calculates and tracks payments to performers and helps studios avoid lawsuits over contracts. While these systems often cost upward of $10 million to develop, *this* studio had determined it could develop one for $7 million in 18 months, says the former IT director of the studio's music division (still working in Hollywood, he requested anonymity). Its secret weapon, he says, was a savvy designer who had created a stellar royalty system for a competitor.

Before long, the project began to hit sour notes. The studio's lawyers protested how much the system would automate the contract process. Studio vice presidents stepped into the ugly fray and delayed the process further. Finally, the designer ignored everyone and began creating the system he had envisioned from the beginning. When the IT director left the company in 1997 (out of general frustration with the studio's divisive culture), the project was still under way, having racked up $10 million in costs with no completion date in sight.

*The consultant was unmanageable, refusing to be beholden to budgets and schedules because, he complained, that wasn't the way his mind worked.*

### The Problem

There were too many stakeholders who wanted a say in the outcome, and no strong sponsor who could mitigate the factions and get things back on track. The executive in charge of the project was a senior user with no experience leading such a project, which only contributed to the politics. "He was far more concerned about spinning the right message to the executive committee than he was about applying good oversight," the IT director says.

This left the designer—in whom the vice presidents had placed the utmost confidence—with the power to take the project where he pleased. "From the beginning, he became almost unmanageable," the IT director remembers. "He refused to share design and analysis concepts with the rest of the team. He refused to be beholden to budgets and schedules. He basically said, 'That's not the way my mind works.'"

For the IT staff, the studio's closed corporate culture made frank discussions nearly impossible without screaming matches. "There was never an atmosphere of low-penalty information flow," he recalls. "No one was allowed to take the authority to make decisions, and yet no one was comfortable making decisions as a committee."

### The Recovery

Again, there was none. A consultant who also worked on the project confirms that the studio is still developing the system. The executive user in charge of the project was replaced with another senior vice president, who applied even less budgetary and scheduling discipline to the project.

### Heavenly Hindsight

**1. Emphasize team, not individuals.** Not only is playing favorites bad for team morale, but it gives too much control to one person.

**2. Appoint an experienced IT project leader.** "If you have a $10 million project, don't put it in the hands of someone who has never managed a $50,000 project," the studio IT director says.

**3. Don't kill the messenger.** Project leaders and other participants need to feel comfort-

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able waving a red flag without jeopardizing their career.

## DiD SoMeBoDY SaY INFRaSTRuCTuRe?

*Few CIOs neglect infrastructure planning today, yet for urgent projects it's easy to minimize network needs and focus on the application. The oversight can be costly in more ways than one.*

### The Project

In 1992, a California pharmaceutical company yearned to reach new levels of productivity in an industry where it usually takes $500 million and between eight and 12 years to bring new drugs to market. The company hoped a new global knowledge sharing application would cut its eight-year development cycle in half—and presumably, the associated costs. The multimillion dollar project was a combination of custom-built and off-the-shelf application software. To further complicate an already complex system, the development was split between IT and a "major" consulting firm. Nine months into the project, the network lab tested the system and found it suffered from sickly response time. "It was so poor it was unusable at first," says Jeff Lucchesi, formerly a network manager at the pharmaceutical company, now CIO at DHL Airways in Redwood City, Calif. The system and its software components had, inexplicably, not been designed to run over a wide area network.

When the application was finally released, it was eight months late, $1 million over budget and lacked the functionality promised to its users. "The only thing on time," Lucchesi asserts, "were the consultants when it came to getting their checks."

### The Problem

The first mistake IT made was leaving its infrastructure group out of the project until the testing stage. "IT didn't have time to scope it out well," Lucchesi remarks. "We were designing and building it at the same time." Second, no single person was accountable for the project. The consulting firm had its own project manager, as did the pharmaceutical company. To add to the confusion, each division in the company had its own IT director, and not all of them reported directly to the CIO. Consequently, when it was apparent the design had fundamental flaws, the finger-pointing and sidetracking began. "That was when the CYA ["cover your ass"] really kicked in," Lucchesi smirks. The consultants wedged themselves between IT and the business, taking advantage of the company's decentralized IT structure to win the trust of the business.

*Participants need to feel comfortable waving a red flag about a project without worrying that it will jeopardize their career.*

There were other problems with the consulting relationship. The contract was designed as a time and materials (T&M) agreement, which means the consultants billed as they worked rather than agreeing to a fixed cost based on deliverables, upfront. This contributed to scope creep, worsening the network problems, Lucchesi says. Today Lucchesi won't even entertain a T&M contract.

### The Recovery

In the end, R&D users did not get the system they wanted because pieces of the application had to be stripped out to improve performance. To no surprise, IT/business relationships suffered measurably as a result. Lucchesi applies the lessons he learned from this story to his current job at DHL, where he's proud to report he's never had an infrastructure problem. He recently completed an 18-month enterprise system project under budget and on time.

### Heavenly Hindsight

**1. Commit time upfront for project planning.** If that's not possible, IT needs to inform business sponsors of the risks (software bugs, deadline extensions). Require the involvement of those responsible for infrastructure, development and project management during initial meetings with the sponsors.

**2. Test the network end to end.** Do this testing before you start development and before purchasing additional bandwidth or making network upgrades. If you don't, Lucchesi warns, you'll wind up spending too little, or too much, on bandwidth.

"THERE WERE A FEW REASONS WE CHOSE

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**3. Hire the best project manager possible.** Lucchesi uses professionally trained project managers rather than shoehorning a technical person into the role.

**4. Avoid T&M contracts.** Since the experience, Lucchesi insists on a fixed-cost relationship with consulting firms. However, he adds, "It takes a lot of upfront work to really scope the project and put in contingency plans."

## THaT DaRN CuLTuRaL THiNG

*The time to learn that your company is adverse to big change is not midway through an enterprise system project. It's wise to assess business goals and cultural readiness before purchasing any technology.*

### The Project

In 1995, mass confusion reigned at an Atlanta-based manufacturer of forestry products. Its 12 divisions were running separate back-office systems, and financial reporting was a nightmare. For instance, $7 billion in sales invoicing was actually internal billing between divisions that exchanged goods and supplies. To simplify, the CFO and CIO jumped headfirst into the zany world of SAP. At first, the various business VPs and stakeholders were all for centralization. On paper, it sounded like the right thing to do.

But 11 months into the project, trees began to fall left and right. Once the vice presidents realized they would soon lose their respective empires for the sake of centralization, they revolted. The project was stopped dead in its tracks before the pilots had begun, according to Dan Sheehan, a former senior IT manager on the SAP project, now CIO at Atlanta-based staffing firm Acycs. As a result of the project, the company had to write off $120 million in software development losses in 1997.

### The Problem

In Sheehan's view, the biggest gaffe was the classic IT mistake of choosing the tool before understanding the business problem. There were no frank discussions with the executive team about the company's long-term strategy and goals until after the contracts were signed and the project team was well under way. This leads to another issue: cultural readiness. The CIO and CFO, who were champions of the project, did not consider whether the company could handle such sweeping change all at once. The plan was a big-bang approach of launching pilot projects in two divisions on five SAP modules simultaneously, followed by the rest of the company.

And to pick up a common theme, consultants got in the way. The company used four consulting firms at various phases of the project, all of whom bickered among themselves over how to approach the project. "SAP didn't have their own methodology at the time, so we were taking all the advice from third parties—who were probably making it up as they went," Sheehan observes. Furthermore, many of the consultants were more interested in controlling the project (and overstaffing it, he adds) than partnering with the company. The project was eventually shelved.

### The Recovery

Once the project was killed, senior management gave division vice presidents the choice to implement SAP or not, and not surprisingly, only one did. Sheehan says the company's systems are still not integrated, and little has changed. Sheehan left soon after to take a senior IT position with another major manufacturing company in Atlanta, where he experienced yet another trying ERP experience resulting from a change-adverse culture.

### Heavenly Hindsight

**1. Help people feel comfortable with technology.** With his current employer, Sheehan takes "road shows" to the business to demo products and discuss new technology concepts like ERP.

**2. Make business needs a priority.** Sheehan says he strives to be a resource to his current CEO rather than touting his own agenda.

**3. Proceed with caution.** At the forestry company, Sheehan says they should have opted for a slower, phased-in approach for SAP, launching the product in just one division initially.

**4. Don't let consultants rob you blind.** Some consulting firms employ a "pyramid" approach, where they involve many people in order to rack up fees. During the SAP project, Sheehan recalls how discussions between consultants and their managers were invoiced as billable time. CIO

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Got a project nightmare you'd like to get off your chest? Senior Writer Polly Schneider would love to hear all about it. Send your stories to *pschneider@cio.com*. Staff Writer Meridith Levinson contributed to this report. For more horror stories, see "To Hell and Back," *CIO*, Dec. 1, 1998.

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## Case Files

# Capital Blue Cross

Building a better health-care plan: How one company weighed its options and made a measured decision

BY RICHARD PASTORE

## Value Methodology

**Capital Blue Cross's** valuation methodology spans the IT investment life cycle, from identifying the business need to the post-implementation audit. The piece of the methodology examined here is "Concept Exploration," which is modeled partly on the Capability Maturity Model. Concept Exploration evaluates and measures all viable IT/business investment options, enabling stakeholders to make a choice based on cost versus value, including hard dollars, comparative quality and risk, as well as intangibles.

**In April 1999, one of** Capital Blue Cross's health-care insurance plans had been in the field for three years but hadn't performed as well as expected for the Harrisburg, Pa.-based company. The ratio of premiums to claims payments wasn't meeting historic norms. In order to revamp the product features or pricing to boost performance, the company needed to understand why it was underperforming. To do this, it needed to analyze relational customer usage data—medical claims, drug claims and demographics of its 1.5 million customers—to figure out the problem and where to make adjustments. Unfortunately, that data was dispersed in transactional systems, stored in flat files. It had been a struggle to make meaningful deductions using existing methods of reentering transactional flat file data into spreadsheets.

External deadlines added to the pressure. Before Capital could make any product modifications, it had to submit the proposed changes for approval by state regulators, and the submission cutoff date was February 2000—only 10 months away. Miss the date, and Capital would have to wait six months to a year for another chance to submit.

Because any change to the insurance product would affect the finance and operations groups and involve data, the major stakeholders were the CFO, the executive vice president of operations, and CIO and Senior Vice President Ted DellaVecchia. (DellaVecchia recently left this post to become CIO and senior vice president at Starbucks Coffee Co.) These three, plus members from the user teams, sat down last April to do the Concept Exploration, facilitated by Director of Quality Mick Meckler and his team.

"Building a **new environment**— a relational **data mart**— was **risky** because we had **never** done it before."

–TED DELLAVECCHIA, FORMER CIO, CAPITAL BLUE CROSS

### Identify the Business Need

The stakeholders came to the discussion already knowing they needed better extraction and analysis of usage data in order to understand product shortcomings and recommend improvements. "We hadn't gotten at the answers and the underlying issues," DellaVecchia says. "The true facts weren't there to work with."

### Identify Alternatives

After listening to input from the user teams, the stakeholders proposed three options. One was to persevere with the current manual method of pulling data from flat files via ad hoc reports and retyping it into spreadsheets. This wasn't merely a straw-man alternative, DellaVecchia points out.

The second option was to write a program to dynamically mine the needed data from Capital's customer information control system (CICS). While the system was processing claims, for instance, the program would pull out up-to-the-minute data at a given point in time for users to analyze. (In retrospect, this option probably would have proved technologically impractical, DellaVecchia says, but it was a legitimate alternative at the time.)

The third alternative was to develop a decision-support system to allow users to make relational queries from a data mart containing a replication of the relevant claims and customer data.

*Quality Director* **Mick Meckler** *(right) and former CIO* **Ted DellaVecchia** *joined other stakeholders to weigh alternatives.*

PHOTO BY ALAN WYCHECK

Each of these alternatives was evaluated on cost, benefits, risks and intangibles.

### Estimate Cost Versus Value

Capital's valuation incorporates cost and payback in dollars, the relative quality of the outputs the systems would deliver to users, the levels of risk and the intangibles.

**Dollars:** Capital bases cost on dollars that would be spent on resources and time, including hardware and software licenses and development time spent by users, IT staff and consultants (calculated from fully weighted compensation for full-time equivalents). In this case, the team chose to factor costs over five years to avoid the fallacy of

choosing an alternative based on misleading short-term costs.

The team came up with initial cost estimates quickly in order to expedite the analysis and choice of alternatives. After the analysis period, when the final approach was selected, Capital did additional ROI analysis to help establish a budget for the initiative. This budgeting process took four to five weeks because of the time needed to research the vendor's technology offerings. Because this project was expected to be expensive, extra care was devoted to this part of the analysis (the final budget for the project amounted to 4 percent of Capital's annual IT budget).

To estimate dollar payback, the team used numbers from two areas: internal savings and the return that the health-care plan modifications would generate in the field. Depending on the option considered, internal savings could derive from the number of IT people freed up from support and redeployed, unnecessary software licenses that could be jettisoned and reduced need for hardware such as direct access storage devices (DASDs). Pursuing the decision-support option and its requisite data mart would also yield savings and cost avoidance by allowing Capital to cancel development of a costlier, redundant, less-focused data warehouse project underway at the time.

Estimates of health-care plan returns from the field were based on historical "medical/loss ratios," a metric insurers use to calculate premiums coming in against claim payments going out. If plan adjustments resulted in the current ratio improving to meet or exceed Capital's traditional ratio, the resulting value would be directly attributable to the new system. The difference between the current ratio and the target ratio was the number applied to the ROI estimate, DellaVecchia explains. He admits that there is a big assumption behind this number—that the marketplace would react as anticipated to any changes in the health-care plan.

The manual, existing method came up high on cost because of the long-term expenses of writing and maintaining ad hoc

**CRITICAL ANALYSIS** BY DOUGLAS HUBBARD

# Be More Actuarial

**Capital Blue Cross starts off on the right foot. Though the process of identifying business needs and options for fulfilling them is often ad hoc, Capital uses a deliberate, formal method. I would recommend that Capital and others employ this process not only when they have a specific problem to react to but also to identify strategic opportunities.**

**Capital felt that only one of the proposed alternatives—the data mart—deserved more measurement attention. DellaVecchia and his group show good intuition here; measurement matters most where the uncertainty is greatest. But it's important to devote as much attention to measuring benefits as estimating costs. It's common in IT to spend much more time on costs, but it is usually a misallocation of effort. However uncertain you think you might be about costs, you are usually even more uncertain about benefits. Our research shows that reducing uncertainty about benefits, as opposed to costs, usually has a larger effect on the likelihood of making the best investment decision.**

Douglas Hubbard is founding partner of Hubbard Ross in Glen Ellyn, Ill. Hubbard Ross uses the scientific and mathematical principles of applied information economics to systematically analyze the economic value of any IT investment. Hubbard is a former IT manager and has more than 10 years' experience in consulting. Reach him via e-mail at *dhubbard@hubbardross.com*.

**Categorizing a system's risk as high, medium or low isn't really a measurement of risk. Risk is too important to leave up to vague labels. IT groups—even in insurance companies—don't often speak about or measure risk in ways that are actuarially sound. Insurance company actuaries measure risk probabilistically, and IT should be able to copy that discipline and do the same thing to quantify risk. Once you start measuring risk rather than labeling it, you might discover that return-on-investment expectations, such as Capital's 12 percent, may be too low to justify the risk. (See "Hurdling Risk," by Douglas Hubbard, *CIO Enterprise*, June 15, 1998, *www.cio.com/archive/enterprise/061598_checks.html*.)**

**As for intangibles, if you think something falls under this classification, ask yourself, "How do I know when I have it?" If it is truly undetectable in any way, then it probably is of no consequence to your company. But if you can identify how to observe it, you are halfway to measuring it. Labeling something "intangible" removes some of the most important benefits of IT from the ROI calculation.**

**Even Capital's evaluation of quality is quantifiable. Quality of information should be represented in Capital's "dollars" estimate (ROI) as the economic consequences of better decisions resulting from reduced data errors. Capital's quality focus is important, but it needs to end up in the ROI calculation.**

**The bottom line: Capital's Concept Exploration focuses on identifying the right investment, and most firms would do well to emulate it. But these efforts will be more accurate and effective when the team spends at least as much time calculating benefits as it does cost, and finds a quantitative representation for risk, intangibles and quality that can be rolled up in the ROI figure.**

PHOTO BY GREG GILLIS

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data reporting programs and maintaining staff with CICS expertise, a skill set DellaVecchia wanted to transition away from.

The second option, writing a dynamic transactional data extraction program, would also incur high costs because the program would have to be ever-changing in order to accommodate user requests for different slices of data.

The third option, the decision-support data mart system, had the highest short-term costs because of the pricey software license and the costs of hiring consultants to assist in the implementation.

The payback calculations were thus: The decision-support system option would return 12 percent annually over five years, based on anticipated internal savings and improvement in the medical/loss ratio. Capital did not bother to spend much time calculating full returns for the other two options because it became apparent that they were far outclassed by the decision-support system based on other factors. "If all three options were equally viable, we would have done a full business case for each," DellaVecchia says. In this instance, it didn't make sense to expend that effort.

**Quality:** This is a measure of the accuracy of the data and the relative quality to those business functions using it for management decisions. For different projects, the impact of quality may vary, increasing or decreasing its importance in the Concept Exploration equation. In this instance, quality was the key decision factor—without high-quality data to base decisions on, the health-care plan changes might be ineffective, or even worsen the situation. Best of breed was important to this effort, but if the company wanted a quick-and-dirty, one-time solution, quality may not have been weighted as heavily.

With the manual method, inaccurate rekeying of report data into spreadsheets could easily undermine data integrity, and the processes would be virtually unauditable. For the transactional extraction program alternative, the data would presumably be accurate, but it would not be practical and perhaps not even possible for the program to provide relationships between the data, reducing its value. The decision-support data mart, because of its auditable processes, data cleansing and relational capability, would yield the highest level of data quality, making it much more likely that user decision making would be sound.

## Valuation Flow Chart

*Capital Blue Cross Concept Exploration*

1. **Identify business need:** Improve insurance product by analyzing usage data
2. **Identify alternative initiatives:** Manual analysis, transactional data analysis, decision-support data mart
3. **For each alternative, estimate:**
   **Cost, return and ROI:** Data mart had highest initial cost but highest annual return
   **Quality of system outputs:** Data mart offered highest quality of data analysis
   **Risk of project failure and failure to generate expected return:** Medium risk for all alternatives
   **Intangibles:** Not measured
4. **Recommend best initiative:** Data mart

**Risk:** The ideal risk rating for any alternative under Concept Exploration would be low-low, meaning a low risk of project failure and, in the case of failure, a low impact on the business. Capital calculates the impact of a failed system using estimates of the costs of downtime, lost sales, fines and even lawsuits. The risk of a given project failing is mainly relative—how much more likely is this project to flounder than that project, based on its complexity, past experience, having appropriate skill sets, the viability of the vendors and so on.

In the case of the three data analysis alternatives, "they were all risky," says DellaVecchia. "Continuing to do things manually was risky because we might never have gotten the information we needed. Creating a proprietary program to extract data from a dynamic transaction system that wasn't auditable was risky. Building a new environment—a relational data mart with a customer interface—would be risky because we had never done it before." And the tight timing mandated by the state regulators upped the ante for all three options. Each one rated a medium-medium risk, so this category of evaluation was not a differentiator.

**Intangibles:** The Concept Exploration team did not identify any intangible benefits for the alternative approaches. "The other differentiators were so overwhelming, we didn't feel we needed to consider intangibles," Meckler says. When the other decision factors seem relatively equal, intangibles get more consideration to help guide the decision.

In hindsight, DellaVecchia sees several choice intangibles from the decision-support system, including an infectious demand for data marts throughout the enterprise and a generally stronger regard for the power of information for competitive advantage.

### The Recommendation

Quality emerged as the big differentiator in this Concept Exploration and, along with the dollar valuation, was the deciding factor in the stakeholders' choice to pursue the decision-support system option. The other two options, Meckler says, "boiled down to throwing more resources at the problem or automating the wrong thing." The decision-support data mart went live at press time, and Capital appears on track to meet the state regulator's deadline for change submissions this month. CIO

Have a value methodology you'd like to share and have analyzed? E-mail us at *casefiles@cio.com*. Value Proposition is edited by Katherine Noyes.

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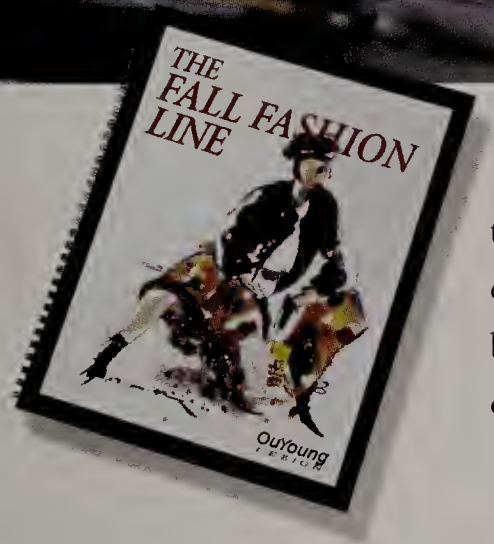


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# THE SILVER SCREEN'S DIGITAL DREAMS

As movie costs skyrocket, the "biz" in showbiz has become ever more critical. And increasingly that means that IT has moved from supporting actor to leading man. BY DEREK SLATER

Hollywood. People come here from all over the world in search of fame and fortune. Some find both. Most find neither. But scrape off the Tinseltown stardust and there's a plain old biz beneath the show: a film industry that in recent years has experienced both feast and famine. Paramount's 1997 *Titanic* raked in $600 million at the box office and put director James Cameron on top of the world. In 1998, Universal's *Babe: Pig in the City* took in $18 million, cost a porky $85 million to make and (along with a few other underperforming titles) cost Universal Chairman Casey Silver his job. In Hollywood, the technical term for that kind of ROI is bomb.

How to avoid the flops and make only the hits—that's the holy grail in Hollywood. Technology hasn't yet provided the formula for a guaranteed box office smash; most people think it never will. In fact, Hollywood regards technology with a certain ambivalence. The dream factories worship creativity, not technology—people, not machines. The movie business is traditionally based on intuition, inspiration, negotiation and the handshake.

◄ 20th Century Fox CIO Justin Yaros: "Bringing IT into the creative process—that's the ultimate IT-business alignment in this industry."

PHOTOGRAPH BY ERIC TUCKER

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- ► Digital performers and their e-commerce applications
- ► How competition leads to cooperation among the cutthroats

None of those things automate easily. So even as more and more technology shows up on the screen, sometimes to great effect (1999's *The Matrix*), and sometimes not (1999's *The Mummy* and *Wild Wild West*), studio CIOs every day confront an acute version of the standard IT conundrum: when to push against corporate culture and tradition, and when to go with the flow as they strive to provide competitive advantage with their information systems.

"It's a very old business, very non-process-oriented, and we've had to work around that at times," says Justin Yaros, CIO of 20th Century Fox. "But it's hard to argue with some of the efficiencies IT can bring."

A film passes through many stages and many decision points before it arrives at the local 24-screen megaplex. Those decision points provide a showcase for Hollywood IT, its efficiencies and its influence on the creative process.

## Scene 1. A Film Is Born

**ACQUISITION** A movie starts with a concept; the concept becomes a pitch; the pitch becomes a screenplay. Let's call our script *Indiana Bob and the Mayan Enterprise Architecture Mystery.*

20th Century Fox brings in 40 to 60 new screenplays every week, and that's where IT first steps into the picture. *Indiana Bob* gets scanned into a system Fox calls S-Files, a play on *The X-Files,* Fox's popularly paranoid network TV show. S-Files is a 3-year-old Notes-based document management system. *Indiana Bob* is assigned to a reader who writes a synopsis of the story, classifying it by genre, author and so on. Every Fox employee involved in story development, up to the corporate chairman, works out of S-Files. Users query the system to find particular writers or all the scripts in a given genre. So if Tom Sherak, the chairman of the 20th Century Fox Domestic FilmGroup, decides audiences are ripe for an action-adventure thriller about a vanished South American empire and its infrastructure standardization challenges, up pops *Indiana Bob.*

**The Hit:** *Titanic,* which featured computer-generated passengers aboard the doomed ship, raked in $600 million at the box office in 1997.

After *Bob* gets green lighted, the project goes from S-Files into Deal Maker, a custom Fox application that the legal and business affairs departments use to structure and track contracts with directors, writers (known in Tinseltown parlance as "above-the-line talent") and actors. Again, Fox can query the data in Deal Maker, allowing the studio to compare potential new deals with the old. Yaros calls it "sort of a competitive tool vis-à-vis the talent," rather than against other studios. For example, if the man behind the Darth Vader mask wants a 50 percent raise to appear in the next George Lucas prequel, Deal Maker will give Fox execs the going rate for performers whose faces are never seen and whose voices are dubbed.

*Star Wars* looms large in Fox's corporate legend. Visitors to Fox's gated lot in Century City are quickly reminded of the 1977 blockbuster that effectively saved the studio. The gargantuan sound stage facing the entrance bears the five-story painted likenesses of Vader and other *Star Wars* characters. Yaros, whose modest office building is tucked into the shadow of said sound stage, proudly notes that Fox has released half of the top 10 blockbusters of all time.

**The Flop:** *Babe: Pig in the City* cost $85 million to make and took in $18 million at the turnstiles. Not a good ROI.

**PRODUCTION** So the deal gets done. The director and stars have signed on, and the film is really going to happen. Next, a series of systems come into play that Yaros puts under a "proximity and story tracker" umbrella. The film production process is a project-management challenge that IS professionals can appreciate.

The producer and director are responsible for figuring and refiguring budgets. Financing comes next, as the studio looks for partners to share the risk. The production company assembles props and rounds

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up costumes. Location scouts scout locations. Producers schedule and reserve sound stages. If the movie is being made in another city, Fox needs to apply for permits and negotiate with local trade unions. Special effects are outsourced. The producers assemble a team of accountants, cinematographers, electricians, gaffers, publicists, script girls, first and second unit directors, and on and on into the hundreds.

Many tasks under way, many contractors to pay, aggressive completion dates targeted with no guarantees. If you've got Brando contracted for seven shooting days in Manhattan, the sets had better be ready on time and the caterer had better be there because Brando is headed back to his Pacific island after those seven days are up whether or not you've shot all his scenes. Fox applications keep tabs on the various components and automatically generate appropriate payments as production managers check off steps along the way to the film's completion.

## DISTRIBUTION AND EXHIBITION

It is a sad thing to make a good movie and then release it at the wrong time. The aforementioned talking-pig sequel *Babe*, among other problems, got roasted in the afterburners of Disney's *A Bug's Life* and Paramount's *Rugrats* children's movies. MGM/UA played it smarter with *The Thomas Crown Affair* last summer. The film's original June release date was moved to late summer to avoid going up against Paramount's *The General's Daughter*, starring John Travolta, and Fox's *Entrapment*, a Sean Connery flick "with the same plot as *Thomas Crown*—James Bond stars as art thief," according to Gitesh Pandya, editor of movie site Boxofficeguru.com. By dodging direct competition, *Thomas Crown* pulled in a solid $14 million its first weekend.

There are plenty of complicating factors, some more obvious than others, in choosing a release date. World Series weekends are not great for anything. Ditto Super Bowl Friday, Saturday and Sunday. Scary flicks do better around Halloween, and Santa gets a frosty reception in July.

Choosing the right theaters is also a challenge. Movies directed at teens score better at mall theater locations than at art houses. Action flicks are not optimally positioned in houses with an older audience demographic. Fox uses two key applications in the scheduling and distribution stage. One is 8-Ball, a theatrical data warehouse Fox developed internally (with the assistance of US Web/CKS). Fox distribution reps access 8-Ball over the corporate intranet to help determine which theaters in their territory are most appropriate for a given film. 8-Ball's data, for instance, will show which local cinema draws a particular audience. That science doesn't take away all the art—after all, what if *Indiana Bob*'s Meso-American subtitles give it a better shot with arty theatergoers than with the testosterone crowd? That's a call Fox's people still have to make on their own.

Once the preferred time of release and favored exhibition sites are chosen, the actual booking, scheduling and accounting is handled through another application, developed in conjunction with Hollywood Software, dubbed Falcon (after Han Solo's Millennium Falcon, "the fastest hunk of junk in the galaxy"). Settling on the split—how much money is kicked back to the studio and how much stays with the exhibitor—is another negotiation. And, like other studios, Fox often asks for a guaranteed minimum onscreen stay for each of its films. (For last summer's *Star Wars* prequel, *Episode One: The Phantom Menace*, Lucas demanded an unheard-of six-week commitment from exhibitors. Lucas also negotiated an unbelievable 80-20 split; that is, 80 cents on every box office dollar went to Lucas.)

Terms can grow quite complex. Falcon keeps track of the deals and also keeps tabs on the copies of the film being distributed. Each film's weekend performance is updated immediately in Falcon, which means Fox executives have current numbers to look at every Monday.

"A lot of decisions get made Monday morning," Yaros says: whether to pull a poor performer, pump in more marketing money, extend a sleeper's run or put a smaller film in wider distribution. Yaros describes Falcon and 8-Ball as "the mainstay of the distribution process" for Fox.

## MARKETING

The biggest splash right now in movie marketing comes not from a studio's internal system, but a very external one, the internet. Last year's *The Blair Witch Project* opened eyes industrywide to the power of internet marketing. Hollywood executives snickered when Artisan Entertainment, a small ($400 million) company, paid a million dollars for the right to distribute the low-budget film. But Artisan had the last laugh. *Blair Witch* generated over $150 million in ticket sales, thanks largely to a low-cost net-based marketing campaign, notably including a site that intentionally left visitors wondering whether the story was fact or fiction, and an infectious word-of-mouth effort aided by e-mail. Web movie discussion boards hummed with *Blair Witch* anticipation long before the movie hit theaters. "*Blair Witch* was pivotal. It proved that the internet can drive lots of business to the theater. That's going to have a great impact over the next few years," says Boxofficeguru.com's Pandya.

Yaros says Fox—like the other studios—hasn't yet figured out all the ramifications of the internet for the movie business; he has more questions than answers about the future of the web as it applies to the industry. But the effort Yaros is spearheading to define Fox's internet strategy has received plenty of attention from the top of the corporation. "Senior management has become very receptive to these ideas," says Yaros. "They saw

what happened to the music industry [with the net threatening the very existence of today's record labels] when that industry was myopic about it." That's a nice turnaround in attitude toward technology for a company that Yaros describes as being "an IT wasteland" prior to a mid-'90s management change.

Applications like S-Files, Deal Maker and 8-Ball clearly make the movie-making process more efficient. And the internet may open new possibilities for creative marketing. What these technologies don't do is guarantee that the script is great, the director right or the performances Oscar-worthy. "You can take the best script S-Files churns out and still make it into a flop," Yaros says. On the other hand, Yaros isn't content to limit technology's role to the back office. "Bringing IT into the creative process—that's the ultimate IT-business alignment in this industry," he says.

## Scene 2. Stars Rocked by Digital Divas!

The sexiest technology in Hollywood has long been the stuff that shows up on the screen—from 1933's stop-motion animated *King Kong* to Ray Harryhausen's work in the *Argonaut* and *Sinbad* movies in the '60s to Industrial Light and Magic's *Star Wars* special effects in 1977. More recently, computer-generated (CG) characters have defined the cutting edge. *Roger Rabbit* made the scene in 1988 with humans and animated characters sharing the screen. Then in 1993, Silicon Graphics-created dinosaurs in Universal's *Jurassic Park* took CG characters another

# After dinosaurs and toys,

the next frontier for PacTitle/Mirage Studios cofounder

Ivan Gulas is computer-generated performers.

step forward. Pixar Studios went all the way in 1995 with the Buena Vista-distributed *Toy Story*, the first all-computer-generated feature film.

The next frontier: CG humans.

Toys and dinosaurs, impressive though they may be, are child's play next to creating a convincing CG human being. Audiences are extremely adept at spotting a fake, says Ivan Gulas, cofounder of PacTitle/Mirage Studios (PTM) in Los Angeles. (Gulas has recently terminated all of his involvement with PTM. He has founded a new company, MirageQuest.com in L.A.) Historically, the mainstay of PacTitle's business has been the titles and credits that roll at the beginning and end of a film—by Gulas' estimate, PTM provides that service for 80 percent of all Hollywood's feature films. But the company's hot project now is a software toolset called LifeF/x, which generates convincing animated humans.

Moviegoers in late 1997 saw some of PTM's handiwork strolling around the deck of the Titanic during long shots.

PTM describes LifeF/x more officially as a biological CAD system; it generates its human actors based on an enormous database of anatomical information, including the properties of facial tissue and the nuances of expression associated with particular emotions. The genesis of LifeF/x was in an academic project spearheaded by the University of Auckland, New Zealand, to create a database/computer simulation of the entire human physiology. The data in LifeF/x is captured from live performers going through an array of expressions; PTM's software identifies and collects information from 500 data points on the human face.

It's a marriage of human brainpower and machine brawn. PTM's principle employees hold advanced degrees in a remarkably broad array of scientific disciplines. Gulas has a PhD in clinical psychology; other PTM personnel are mechanical engineers, biomechanical engineers and physicists as well as graphic artists and animators. To execute these mad scientists' visions, PTM has an arsenal of hardware that performs the rendering necessary for this kind of finely detailed animation.

The company's facility, a modest-on-the-outside brick building just a few blocks from the location of Hollywood's first film studio on Sunset and Gower, is three years old and wired to the hilt. The computer room houses three generations of Silicon Graphics servers and a Sony PetaSite storage unit with 21 terabytes of storage—enough for about 100 feature films in compressed digital format, according to Gulas. All of the processing is centralized on the SGI boxes, which allow the graphic artists to roam freely to any of the 60 or so workstations in the building and still pull up their own customized desktops. The local workstations consist only of a monitor and keyboard connected by optical cable to the servers.

PTM's simulacra aren't perfect; sit one down on film in broad daylight next to real people and no one would be fooled. Nevertheless, so convincing is the LifeF/x CG character that it goes right to the heart of the man-versus-machine conflict in Hollywood. Some performers have expressed fear about being replaced entirely by soulless digital "humans," much as musicians were once afraid of drum machines and synthesizers. Gulas believes those fears to be unfounded. In fact, he says the LifeF/x software can be used to capture the facial expressions of a single performer and then re-create that expressive performance on any CG character, be it human or frog. The performance, he says, is still driven by the talent of the actor or actress. "We've just given them a new front end," Gulas says with a smile.

Now imagine the commercial applications of the LifeF/x project. Consider an animated customer service representative that works over the web. Once the customer downloads the face, the interaction relies on relatively compact sound and facial movement data. Suddenly your company has an automated-but-sympathetic sales personality over the net that is customized to the task at hand, never gets tired, never calls in sick and never leaves for better money or perks. PTM has a demo of such an application, dazzling not so much because of the animation but rather because of the way in which the animated persona responds in a highly customized fashion to the customer's input. "E-commerce is very driven by the human element," Gulas points out.

Performers have expressed fear about being replaced by soulless digital "humans."

PacTitle/Mirage Studios cofounder Ivan Gulas (left) with his digital simulcra, Miss Jessica. (Why the hats? Making convincing digital hair is a bear.)

Although the demo does show that this type of technology opens up new possibilities for web-based service, there is one snag: hair. Making convincing CG human hair is even tougher than making a believable face. Miss Jessica, PTM's favorite CG spokeswoman, wears a hat that covers her head entirely. But it's presumably just a matter of time until PTM delivers that elusive good hair day.

## Scene 3. Studios Cover Their Back Ends

As if talent, timing and onscreen technology weren't enough to worry about, movie biz CIOs have the usual concerns over infrastructure, office applications and the like. It's a hypercompetitive business. "It's not unusual to see four or five major films released at the same time," says Pandya, which adds up to pressure for low-cost, high-efficiency IT.

That kind of pressure has driven other

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industries toward packaged software, to let someone else worry about development and maintenance. No such luck in Hollywood, says Jim Halsey, CIO of Warner Bros. in beautiful downtown Burbank. Because of the idiosyncratic nature of the business, most movie studio applications have to be homegrown. Halsey, for example, recently completed an evaluation of packaged payroll applications. "I was quite optimistic at first, but with the complexities of our pay structures we ultimately decided it was better to enhance our own [existing] system than to bang a square peg into a round hole" by trying to make a generic package work. Studios produce complicated financial statements called ultimates to track all revenues related to a given title and account for the distribution of those moneys among the innumerable concerned parties: the studio, the investors, the producers, the performers, the theaters and so on. Studios do use a few off-the-shelf applications, such as MovieMagic, a software suite from Burbank-based Screenplay Systems, for tracking and budgeting film production tasks.

Warner Bros. CIO Jim Halsey believes **most movie studio applications have to be homegrown.**

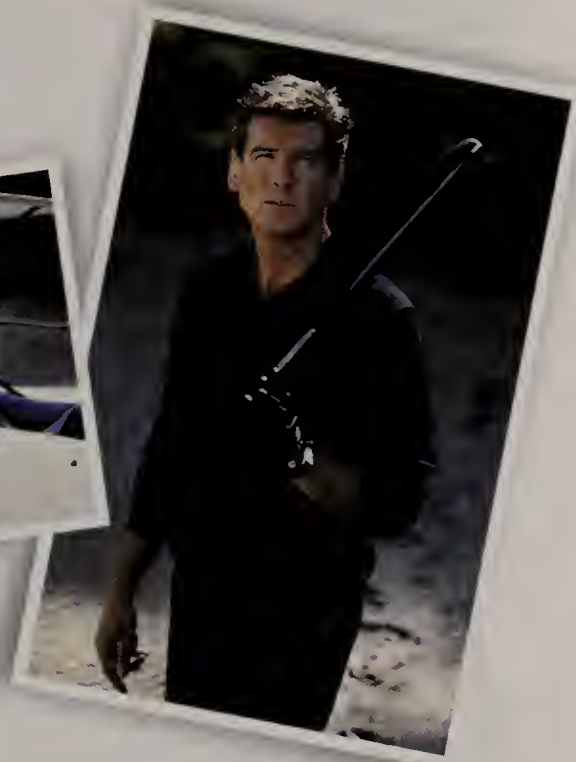
Another possible IT-driven cost efficiency on the horizon is in distribution. Fox already uses its corporate intranet to distribute trailers (the film clips used in previews and other promotions) for upcoming films. A simple browser interface lets Fox workers in various locales log on and download clips at roughly their normal playing speed; that is, a 30-second trailer takes approximately that long to download. That saves Fox big bucks (Yaros doesn't specify how much) by cutting out the need to physically copy and ship thousands of such clips to domestic and international exhibitors. Plus, the clips no longer get lost or fall into the wrong hands, as sometimes happened with the physical copies.

That sort of development eases the burden for the major studios but simultaneously puts the squeeze on other CIOs in Hollywood. Steve York, senior vice president of information technology at L.A.'s Rank

Group Deluxe Entertainment Services, is responsible for five business units; four of them handle duplication and distribution of film copies and videocassette copies for the big studios. (York's fifth business unit is Pinewood Studio in London, where the most recent Bond movie, *The World Is Not Enough,* was filmed.) "We feel pressure from the studios to reduce costs every time a contract comes up," York says. The biggest threat to Rank Group's operations, of course, is that the internet could become the pipeline through which even full-length features are distributed to cinemas. Several vendors are experimenting with such service even now, York says, but he believes that for the moment the theaters' investment in their expensive installed base of 35mm film projectors is a hurdle that internet distribution will require some time to jump.

That gives Rank Group time to adjust its business model accordingly. For now, studios not only keep sending out VCR cassettes, they are using their product as a lever to create new business opportunities. Warner Home Video (a unit of Warner Bros.), for example, offers vendor-managed inventory as a service for large video merchants. "It's a strategy to increase sales. We'll analyze [your sales data] and replenish your inventory appropriately," Halsey says. The studio acts as a category manager for such customers, using daily EDI sales data to manage the inventory of all titles, not just Warner titles.

Diversification of that sort is in fact the order of the day in Hollywood. No major movie studio is an island. The days of the moguls, the Harry Cohns (Columbia) and Sam Goldwyns (MGM) and Jack Warners (Warner Bros.), are long gone. Today the studios have been absorbed into corporate conglomerates that typically include a television network and TV studios. Jack Warner's old sandbox is today a branch of Time Warner, which includes the WB Television Network and various other media properties. (And a lot more if the AOL merger goes through.) Last fall the studio's sound stages featured sets for a Clint Eastwood movie (*Space Cowboys* was the working title) and plenty of television shows like *The Drew Carey Show.* Walk a block or two from Halsey's office and suddenly you're in Chicago, on the set for NBC's *ER,* surrounded by 10-story brick facades and billboards for the *Chicago Sun-Times.* The view out Halsey's office window is of the beginning of what the studio dubs Laramie Street, a back-lot town where *Gunsmoke* and other westerns have been shot over the years. A diversified product set helps buffer failures and provides possibilities for IT synergies. Fox, in fact, is developing customized versions of its Deal Maker application for its television and music businesses.



By dodging direct competition, *The Thomas Crown Affair* pulled in a solid $14 million its first weekend.

Indeed, the drive to control costs and hit financial targets is so intense that it has led to quite a bit of sharing among the majors. That in itself is not new. The practice of cooperation actually goes back to at least the 1930s, when the studios huddled together to wait out the Depression and the return of leisure spending. Warner Bros. kept its back-lot facilities open partly by renting half the space to Columbia, which had to sell its own back lot.

Today Warner's four-story warehouse of props and garments—eight miles of racks' worth—is open to competitors, who rent props for their own movies after browsing through rooms filled with furniture for Old West saloons, modern gardens, the White House or wherever. Every item is bar coded and tracked through an inventory system. The kicker comes on the way out of the warehouse: A clipboard sitting on the loading dock notifies customers that with enough rentals they'll be credited with frequent flier miles on American Airlines.

A still more IT-based example of recent studio collaboration was HollyNet. HollyNet was a secure, broadband communications network piloted by the University of Southern California with cooperation from Warner Bros., Pacific Bell and other corporations. "If you need to securely distribute your film to a post-production house [for dubbing, adding titles and visual effects and so forth], for example, you could do that over HollyNet," Halsey explains. Halsey says HollyNet was a research project intended to assess the state of the technology and make Hollywood folks aware of the possibilities. Now that the research project has ended, an unnamed private vendor is working to develop a commercial service offering similar functionality.

Whatever happens, technological collaboration will continue in Hollywood. Some of the results will be behind the scenes, and other results will be the scenes, and still other results will show up in completely different industries. As Ivan Gulas says, "Entertainment has played a major role in technology for a long time—it's such a fertile environment for working out bugs and pushing technology forward." And if Hollywood is good to technology, technology can also help Hollywood prosper. As they said in some old western, "There's gold in them thar hills." CIO

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Since reporting this story, Executive Editor Derek Slater has taken to wearing sunglasses everywhere. He can be reached poolside at *dslater@cio.com.*

# Trading Places

*Business-to-business marketplaces are bringing buyers and sellers together on the internet, and all parties involved are reaping the benefits. Here's what you need to know.*

BY SARI KALIN

Ray Rawson hardly seems like the type to get caught up in the dotcom revolution. He's a plain-talking, blue-jeans-clad farmer, fitter than one might expect for his 56 years, busy working a 10,000-acre spread that spans two rural counties in Michigan. Yet early in the morning, before his crews show up, Rawson's farm business meets e-business at a website called DirectAg.com.

At the site, Rawson reads agricultural news that helps him pick the best time to sell the options on his soybean, corn and wheat harvests. He figures that in one month last fall, he made an extra $100,000 or so in profits thanks to information that he would have had to otherwise chase down by phone or would not have seen at all. Information such as news on what the ag markets did overnight in Europe gives him an edge in figuring out what they might do in the United States that day. He's also saved money on purchases. DirectAg.com's prices on farm supplies often beat those of local distributors, since he can get a larger volume discount by concentrating his buying in one place. He's saving around $70 a ton on fertilizer alone—a big chunk of change for someone who buys several hundred tons at a time. "In one year, it's enough to go out to dinner a couple of times," Rawson deadpans, "maybe in the Cayman Islands."

Rawson is just one of a growing number of business folks flocking to websites that bring together buyers and sellers within a particular industry, or across a particular business activity, for one purpose: wringing inefficiencies out of the supply chain. These sites go by many names—e-hubs, e-marketplaces, e-market makers, vertical portals, business-to-business trade communities, intermediaries and even metamediaries. They are cropping up in industries from petrochemicals to produce, steel to semiconductors. In 1998, such marketplaces handled around $12 billion in business, not including marketplaces that trade financial instruments, according to Dataquest, a GartnerGroup company. And by the year 2003, Dataquest expects

Learn

- How B-to-B marketplaces will shake up your supply chain
- Whether you should give a marketplace your company's business
- How marketplaces will evolve in the future

ILLUSTRATIONS BY TOM CASMER

$1.25 trillion in nonfinancial goods and services to be traded through them. "Buyers and sellers who aren't participating...will certainly be at a disadvantage," says Leah Knight, analyst at Dataquest in San Jose, Calif.

For buyers, a marketplace can make it easy to find and compare products and prices—easier than paging through dozens of manufacturers' catalogs or calling scads of distributors to find the best quote, Knight says. For sellers, marketplaces offer a chance to reach new buyers, such as small accounts that wouldn't have been cost-effective for a sales rep to handle or that are located elsewhere in the world, or to unload surplus inventory. And those efficiencies add up: Bear, Stearns and Co., an investment banking and securities trading and brokerage company in New York City, estimates that by 2003 marketplaces will yield their participants nearly $60 billion in savings, with reduced supply chain costs accounting for $13 billion of that amount.

Some industries have already spawned multiple marketplaces. Agriculture has DirectAg.com and Farms.com, the chemicals industry has Chemdex, CheMatch.com, ChemConnect and Fobchemicals.com, and the metals industry has MetalSite and e-Steel. Some industries will see more business flow through such marketplaces than others. Some marketplaces aim to take the place of traditional middlemen; others try to work with existing distributors. But smart CIOs and e-business strategists must understand how these marketplaces work—and how they could redefine their supply chains—because if none has cropped up in their industry sector yet, it's only a matter of time.

## Breaking Down the Business Models

MARKETPLACES FALL INTO TWO broad categories: vertical and horizontal. Vertical marketplaces operate in specific industries—agriculture, energy, petrochemicals and so on; DirectAg.com is one such marketplace. Horizontal marketplaces, on the other hand, focus on a specific job function or need applicable to many different industries, such as purchasing used office equipment or maintenance, repair and operating (MRO) supplies. Trade Out.com, a site that auctions surplus equipment, falls into the horizontal marketplace category.

Whether vertical or horizontal, a marketplace won't thrive without a critical mass of buyers and sellers. Buyers won't visit a site if it doesn't have the suppliers they want to buy from; suppliers won't want to participate in a marketplace that doesn't get enough buyer traffic. Content is also key to a marketplace's success: Buyers need enough pricing and product information to be able to make a buying decision. Value-added content such as industry news, expert advice or detailed product spec sheets can make a marketplace that much more compelling.

**A marketplace won't thrive without a critical mass of buyers or sellers.**

What industries are fertile territory for marketplaces to develop? In their September 1999 "Internet Business to Business Report," Bear, Stearns analysts Scott Ehrens and Peter Zapf spell out some of the characteristics. One is size; "intermediaries," the authors' term for an online business that aggregates data and facilitates transactions via a marketplace, are most likely to target industries that do at least $10 billion in business. Another indicator that an industry is ready for marketplace development is a fragmented supply chain, that is, a market in which it's hard for buyers and sellers to find one another. An intermediary can bring them together to help buyers compare offerings. And when products, inventory levels and prices change quickly, or product descriptions are complex—when it's hard for buyers to compare product information—an intermediary can aggregate such information and make it easier to search.

Though they both target the business-to-business e-commerce space, these marketplaces differ from extranets. Extranets just web-enable relationships between existing partners; they tend to be run by a single company seeking to lower the cost of doing business with its current suppliers or customers. Marketplaces, on the other hand, bring together multiple vendors and multiple buyers; they tend to be run by independent third parties who have deep experience in the industry they aim to serve. Forrester Research senior analyst Varda Lief, in her "Anatomy of New Market Models" report, groups these marketplaces into three categories based on the market model they adopt: aggregators, auctions and exchanges. Some web businesses have already begun to combine these models, but the distinctions offer a useful taxonomy.

Aggregators aim to be "one-stop shopping" locales, gathering the catalogs of many suppliers and presenting them to targeted groups of buyers, as DirectAg.com does for farmers like Rawson. Aggregators can give

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small sellers access to a broad range of buyers; they can also group small buyers to increase their buying power and consequently offer them volume discounts. They keep buyers from having to call distributors or scan catalogs, and they can make it easier for sellers to set up an online presence.

Auctions offer venues for suppliers to unload excess inventory; buyers bid against each other to set the price. The advantage for buyers is that they can get lower prices on surplus goods; sellers can shorten the amount of time they hold inventory and can get access to new markets. MetalSite, for example, is a marketplace that facilitates the buying and selling of steel and other metal products. The site's first investors included three of the biggest names in the industry—Weirton Steel, LTV Steel Co. and Steel Dynamics—and sellers offer $45 million to $50 million in inventory on the site every month. The site initially sponsored only sealed-bid auctions of non-prime and surplus products. Last fall it began offering participants the chance to buy both prime and non-prime metals online through a product guide on the site that specifies list prices but also offers contract and volume-discount pricing, as well as the opportunity for online negotiations. The site offers steelmakers several advantages. "It opens up another channel of distribution for them," says Maggie Bray, MetalSite's manager of communications. "It's a more efficient, more streamlined way of doing business. You can deal with thousands of buyers at a time instantly, rather than one phone call at a time."

Exchanges, akin to the Chicago Board of Trade or Nasdaq, are anonymous marketplaces that let industry players trade commodities—such as excess chemicals or energy capacity—in a spot, or last-minute, market. By bringing buyers and sellers together on neutral trading turf, the market determines the price dynamically, with both buyer and seller able to go back and forth on a price. CheMatch, an online spot market for petrochemicals, plastics and fuel additives, counts industry giants like ExxonMobil and Dow Chemical among its participants, all of which are pre-screened. Trading is anonymous, but traders can spell out with whom they want—and don't want—to do business. Jorge Werlang, vice president of global commodities trading at Voest-Alpine Intertrading, an international commodities trading company in Houston, says using the exchange saves him the trouble of calling individual traders or brokers. In a fast-paced market, where Werlang is sometimes so busy that lunch consists of a cappuccino Slim-Fast slurped down at his three-screen trading desk, time is of the essence. He believes human brokers feel threatened by the fact that CheMatch lets him watch the market—and its fluctuating prices and product availability—play out in front of him. "You see what's happening," Werlang says, as he watches the CheMatch screen change color, letting him know that a seller has decided to make a lower counter offer on his $2.5 million bid to buy 60,000 barrels of benzene. "Brokers know that it's hard to represent the market differently than it is."

Business-to-business marketplaces earn money in a variety of ways. Some sell advertising, although for many that is becoming a less important piece of the revenue stream. Matchmaking sites—those that gather requests for proposals or requests for quotes—may charge sellers a finder's fee for every buyer lead they pass on. Sites with a catalog component take a markup on the items they sell, just as distributors do. For DirectAg. com, that markup ranges from 10 percent to 30 percent—similar to the markup a traditional ag distributor would charge. The difference is that a traditional distributor might carry products from just a few manufacturers, while DirectAg.com carries a broader selection. Farmers who concentrate their buying at DirectAg.com receive greater volume discounts than they would at a traditional distributor. The typical range for markups in multivendor catalog sites is 5 percent to 15 percent, according to Bear, Stearns. Auction and exchange sites typically charge buyers, sellers or both a transaction fee; on CheMatch, for example, buyers and sellers currently pay one-tenth of a cent per gallon on each trade. Some marketplaces charge membership fees, although Bear, Stearns notes that those fees can keep people from signing up to a marketplace, and they are

## Before You Join

*Don't get involved in a business-to-business marketplace until you've done your homework*

**Whether you're a potential buyer or you have wares to sell, you need to consider the following tips before you join a business-to-business marketplace.**

**Buyers should**

- Look for the lowest prices and broadest selection
- Seek assurances of quality and reliability
- Check out a site's financing and logistics services—they can tip the scale in favor of one marketplace over another

**Sellers should**

- Compare the fees with those charged by other marketplaces and by traditional distributors
- Find out whether the marketplace delivers enough foot traffic to merit those fees; also ask how well your brand will be represented online
- Beware of how online sales impinge on sales through other channels, but don't let channel conflict stop participation if your buyers want you to join a marketplace
- Be prepared for the technological hurdles of integrating back-end systems with marketplaces

**Buyers and sellers should**

- Determine whether the marketplace lets you preserve existing relationships, for example by allowing you to identify a preferred buyer or seller
- Ask how the marketplace screens out fraudulent participants

*–S. Kalin*

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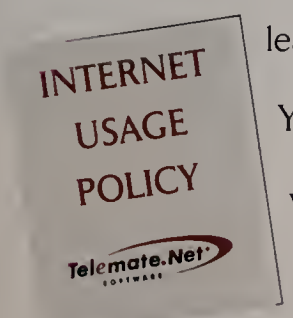


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frequently waived. Expect to see a lot of tinkering with these formulas over the coming months: Marketplaces that now charge buyers to participate may decide that it is more advantageous to charge sellers, and vice versa. "These business models are all still very young, and they're not worked out," says Erica Rugullies, director at Giga Information Group. "We'll see a lot of changes over the next 18 months."

## See How They Grow

As an industry's buyers and sellers have more marketplaces to choose from, marketplaces will need to broaden their sources of revenue and the services they provide to stay competitive. Offering services such as financing, logistics, back-end system integration and procurement management will help them tighten ties with participants. DirectAg.com, for example, has come up with a variety of financial tools, including the ability to sign up online for a house credit account of $17,500, apply for loans of up to $1 million and set up an account with an online bank. "We sell big-ticket items," says Kip Pendleton, president and CEO of DirectAg.com, hence the need for the financing. "We expect the average [farmer] will use our site to buy $230,000 of [products] a year."

While some marketplaces seek to grow by going deep within one industry, others are trying to go wide. That's been VerticalNet's strategy from day one, says founder Michael Hagan. The Horsham, Pa.-based company owns and runs 53 vertical business trading communities in areas such as wastewater treatment and paper manufacturing; it started out largely as a content and community provider, but is now aggressively moving to offer commerce. Its core advantage, Hagan says, is the ability to leverage new technologies across 53 balance sheets. For example, it acquired Isadra (last spring for $47 million in stock), which makes technology for aggregating supplier catalog data, and that technology can be used across its entire network. "We were able to amortize that across the whole network," Hagan says. "Other companies would have had to absorb it in one market."

Analysts have questioned whether VerticalNet will be successful in its move to offer commerce—and whether it will be able to dig deep enough in each industry to compete with industry-specific marketplaces. "A vertical market is more valuable to [participants] the more vertical it is," Forrester Research's Lief says. But some recent developments may validate Hagan's model: Fobchemicals.com, a vertical purchasing site that acts like a co-op for buyers by aggregating orders, thereby lowering prices and transaction costs, opened in November 1999 and is eyeing using the same model in the food ingredients, plastics, metals, paper and packaging industries. And last September Chemdex, one of the earliest aggregators out the door in the chemicals industry, bought Promedix.com, a medical products exchange. "[Chemdex] started in one market super deep, and now they're saying that they can exploit their technology and infrastructure in another," Hagan says.

Whatever their strategies for growth, not all of these marketplaces will survive. As one or two players within an industry get a critical mass of buyers and sellers, they may wind up consolidating with each other or with smaller players. Bear, Stearns predicts marketplaces that need to be deeply integrated with companies' business processes, and hence their internal systems, will wind up having to join forces with Ariba, Commerce One or other procurement software vendors.

Rawson, for one, hopes to see DirectAg.com expand. Some day, he'd like to be able to market his crops via the site. "It would be a [central] place to sell," Rawson says. "Then the world market would know where to come." CIO

## B-to-B Marketplace Sales in 2003

| | |
|---|---|
| **Energy** | **$90 billion** |
| **Chemicals** | **$89 billion** |
| **Food and agriculture** | **$54 billion** |
| **Computing and electronics** | **$40 billion** |
| **MRO** (maintenance, repair and operations) | **$33 billion** |
| **Motor vehicles** | **$21 billion** |
| **Construction** | **$21 billion** |
| **Business travel** | **$20 billion** |
| **Shipping and warehousing** | **$15 billion** |
| **Professional** | **$12 billion** |
| **Pharmaceutical and medical** | **$11 billion** |
| **Consumer goods** | **$10 billion** |
| **Administration/Support** | **$10 billion** |
| **Telecom** | **$8 billion** |

Senior Editor Sari Kalin wants to hear about your experiences, questions and concerns regarding business-to-business marketplaces. She can be reached at *skalin@cio.com*.

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# THE 99.999 PERCENT SOLUTION

*The desire for high-availability networks doesn't mean you live in fantasyland. In the new world of e-commerce, reliability is a constant concern.*

BY TOM KANESHIGE

**NOBODY MISSES THE NETWORK—UNTIL IT'S DOWN.** When a corporate network crashes, its damaging ramifications often sweep across national headlines, wreaking havoc on the company's bottom line and throwing a fiery spotlight on its CIO.

Indeed, too often the blame for what is mechanical error is dumped on the CIO, the chief architect, who has to spin an explanation for why things went horribly wrong. Just ask Maynard Webb, former CIO at Gateway and now president of eBay Technologies. He's in charge of the network that drives the Silicon Valley-based online auction house.

**"Our database is a pretty big single point of failure," says eBay President Maynard Webb. "We just can't throw more hardware at it anymore."**

Last year, before Webb's arrival, eBay experienced a 22-hour outage that deflated the company's market cap by $2.25 billion in a single day and pinched quarterly sales. "There are huge challenges facing any company growing as fast as us," says Webb, who was brought on board to ensure such debacles won't happen again. "We got a little behind the curve in our capacity and operational excellence."

Read this story to learn

- How to identify single points of failure
- Tips on building a high-availability network
- The ups and downs of network outsourcing

eBay's infamous black eye is today's rallying cry for the importance of network uptime in an accelerated electronic world. Companies are spending exorbitant amounts of capital and manpower to strengthen their networks. Still, the potential for a network outage looms on the horizon like a deadly offshore hurricane. No network is safe from disaster; however, CIOs can learn a few tips from companies that have endured head-on collisions with network downtime, and thus improve their chances for survival.

Previously, CIOs relied on systems management tools from Tivoli Systems, Computer Associates International, Hewlett-Packard and

others to safeguard their networks, but the stakes have changed with e-commerce. Suddenly, networks are wider and subject to more weak links. Network downtime is now immediately apparent to customers and business partners. The cost of network downtime has risen exponentially. And it's difficult to measure downtime's effects on sales, market branding, customer loyalty and competition—all moving targets in the new internet economy.

San Jose, Calif.-based market researcher Infonetics predicts U.S. corporations will spend $11.2 billion on network and systems management products in 2003, spurred by trends toward virtual private networks, network security and e-commerce.

The stakes are high for everyone, not just for eBay and the rest of the dotcoms. Infonetics surveyed companies with average annual revenues of $3 billion and found that they lost an average of $4 million annually because of local area network downtime. For wide area networks, companies reported an average annual loss of $3.3 million to downtime. (These figures primarily represent lost employee productivity and don't include losses due to customers being unable to access business services.)

Another key finding of the survey: Companies are allocating more time toward planning and designing their networks. On average, respondents expect to increase their networking staffs to a total of 48 people (up from 39) by mid-2001. "We're seeing people becoming proactive with their networks," says Mike McConnell, analyst at Infonetics. "That's great because it'll save them in the long run."

Dangers lurk inside every cubicle and every networking device. Attaining 99.999 percent availability—five nines is network uptime's equivalent of the Holy Grail—is a tedious and toilsome lifetime pursuit. Failure points include faulty software in routers and switches, increased bandwidth traffic that crashes servers, human errors, configuration problems, power failures, major carrier outages and even the applications that run on the networks.

**Most outages are caused by human error, believes Unisys CIO John Carrow.**

PHOTO BY BILL CRAMER

## Applications Aptitude

It was the application more than the network that bedeviled eBay. But the distinction doesn't matter to CNN or the auction community, Webb found. After more than 20 years as an IT executive at various high-tech companies including Bay Networks, Quantum, Gateway and IBM, Webb accepted the chief technology post at eBay during a precarious time. eBay was in the midst of networking throes that threatened the company's future. "We are confident Maynard possesses the vision and hands-on experience to help ensure eBay's site stability moving forward and to help scale eBay's system," said CEO Meg Whitman, at the time of Webb's hiring.

Webb, too, felt the immense pressure in his new role. He recalls visiting eBay's headquarters shortly after the company's network went down. "I pulled up to eBay and saw CNN and CNBC outside, and it gave me a sense of the kind of attention any blip might receive," says Webb. "I hadn't been announced yet and no one knew who I was, so I walked through the front door like a salesperson—nobody pays attention to those guys."

In Webb's first few months, he implemented a warm backup solution—one that

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allows network recovery within four hours—by increasing redundancy on NT servers, routers, switches and RAID drives. He then built a hot backup solution—basically, a running duplicate of major systems. This reduced his recovery window to within an hour. Webb assembled an eight-person IT group dedicated to evaluating and implementing next-generation networking architectures.

The IT group's biggest challenge was adding resiliency to eBay's crown jewel: a massive database that stores 4.2 million auction items appearing concurrently on the website. However, this impressive number hides the fact that a lone database corruption can knock out the entire network. The server driving the database was also fast approaching architectural limits. "Our database is a pretty big single point of failure," Webb says. "We just can't throw more hardware at it anymore."

After evaluating possible fixes, such as migrating the database to a more scalable hardware platform or tweaking the web application to alleviate some of the pressure, Webb decided to split the database. He created separate databases to handle separate auction categories such as antiques and sports memorabilia. By deploying multiple databases, Webb bought back much-needed headroom. If eBay encountered a database corruption, chances are only one database would go down—and hopefully, only the people participating in auctions hitting the database would notice. "I like my life to be very boring," Webb says.

**"High availability is an attitude," says Intria-HP VP of Technology Mike Somerville. "We have the same attitude as air traffic control."**

PHOTO BY PATRICK NICHOLS

### The Bane of Bandwidth

Of course, it takes more than mere database partitioning to prevent network downtime. SBC Communications, a telecommunications service provider, has made networking a way of life. More than 200,000 SBC employees send 66 terabytes of data over a global network every month, including 16 million e-mail messages a week. The traffic flies over an ATM backbone linking 40 major network centers around the world. All tallied, SBC's networking hardware consists of 4,400 routers, 6,300 hubs and 1,100 switches. "Our internal business network is truly the lifeline of our corporation," says Ed Glotzback, CIO at SBC. "It connects our applications, our data centers and our employees."

Such a massive network is bound to run into problems. Glotzback admits his company has experienced a few outages. The culprit is often traced back to a dual failure in a redundant system, an initial network design flaw or quirky third-party software. Consequently, SBC's IS staff works closely with vendor development groups and conducts rigorous tests on individual products and integrated systems. These efforts, albeit costly and time-consuming, have helped reduce potential network threats, Glotzback says.

Companies also overlook basic physical requirements when designing a network, according to Glotzback. Properly grounding data cabinets and other equipment can save hours of downtime and lost productivity, he says, as can utilizing multiple commercial power feeds.

It's not a perfect science, either. While SBC uses only the internet protocol for wide area networking—limiting Novell's IPX and Apple Computer's AppleTalk to local segments—other companies prefer utilizing multiple wide area networking protocols and platforms to act as safety nets.

### Following Protocol

Sandy Goldstein, CIO at Airgas Inc., a Radnor, Pa.-based distributor of specialty gases, learned about the advantages of many protocols the hard way. Airgas relied on MCI Worldcom's frame relay network to connect 700 branch offices throughout North America. In August 1999, the frame relay network went down.

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**CIO Doug Nassaur of LinuxCare is betting the future on outsourcing.**

network," recalls Goldstein. "My employees were demoralized, my customers angry." Airgas's contingency plan centered on slow remote dial-up and other arcane technology, making it almost impossible for employees to perform their duties.

Moreover, Airgas's field employees, dependent on handheld Sprint PCS telephones to conduct business transactions and check on orders, couldn't get a dial tone. "If you're doing business with MCI Worldcom, keep in mind other carriers are affected," says Goldstein. "You're never really sure who's sharing whose wire." Even internal redundant systems can be rendered useless if they utilize the same egress or share the same power supply.

Airgas survived the outage, and MCI Worldcom issued an official apology. Not surprisingly, Airgas's board of directors demanded Goldstein develop a more flexible backup strategy.

Balancing risk and exposure, Goldstein decided to keep MCI Worldcom as his sole long-distance service provider. Having more than one carrier isn't a panacea, because it increases the management challenge. And if one went down, half of his workforce would still be exposed. But for localized networking, Goldstein did the opposite. He ordered every branch office to contract with at least two ISPs, as a kind of redundancy.

Goldstein also upgraded routers and deployed modems supporting multiple technologies such as internet, serial tunneling, ISDN and DSL lines. "We no longer rely solely on frame relay," he explains. "Should the frame go down again, we'll switch over to another networking platform." The end result of Airgas's wake-up call was "half a million dollars in hardware investments, an additional $80,000 in new dedicated communications, some more extra expenses and an insurance policy," Goldstein says.

## People Problems

All the hardware and software technology investments in the world won't safeguard a network against human errors. This sentiment is echoed by John Carrow, CIO at Unisys Corp., who believes most outages are caused by employee blunders.

Case in point: Unisys's financial staffers were busily closing the August books last year—which also was the end of the company's third quarter—when the system crashed. A Unisys employee conducting a maintenance check at a center in Plymouth, Mich., unknowingly disabled the local area network of the finance department in Blue Bell, Pa. The network was shut down for several hours.

It was a simple mistake, concedes Carrow, adding that because of what the employee learned, "that person will never make that mistake again." Unisys has spent considerable effort developing training programs, discipline programs and configuration control methods—a sort of cross-training for horizontally disparate employees. "Companies can't afford to have telecom-only or data-center-only people anymore," he says. "You need people thinking end-to-end systems all the time, especially with the interdependency you have today."

Network outsourcer Intria-HP, based in Toronto, also emphasizes the importance of the human element and its impact on high-availability networking. The company, a joint venture between Intria and Hewlett-Packard Co., has a network that supports 14,000 branches, 2,000 local area networks and 120,000 point-of-sale terminals. The network has three central sites that triangulate information for backup and recovery purposes. Remote devices ping the network and perform extensive business functions over the internet in order to measure latency from the end-user point of view.

The most important factor in keeping the network up-and-running is the people, says Mike Somerville, vice president of technol-

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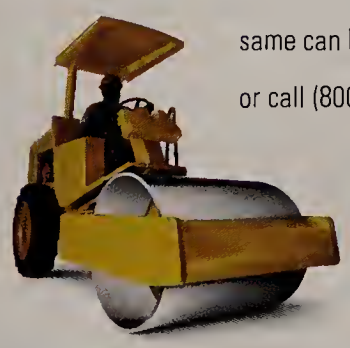

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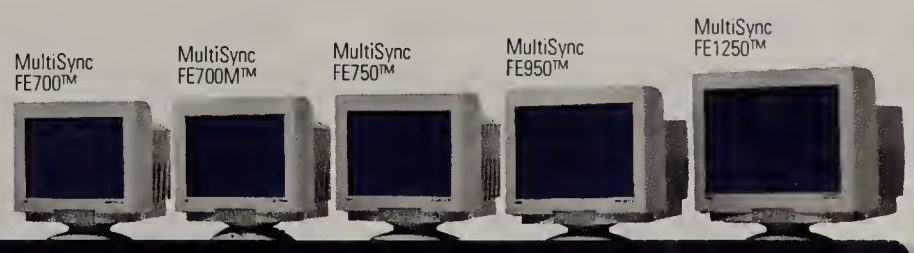


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ogy planning and technical services at Intria-HP. The company encourages its employees to find and fix network problems no matter how trivial they might seem.

For instance, Intria-HP's monitoring software revealed that an ATM backbone was experiencing a slight service degradation. The backup solution, which was another ATM backbone, didn't kick in. Similar to looking for a needle in a haystack, Intria-HP employees searched until they found the error: A circuit was pulsating every 3 milliseconds, which wasn't long enough to indicate a problem and alert the secondary system to take over.

After manually starting the backup, Intria-HP staffers called the vendor of the automation software. They asked the ISV to fix its product. At first, the software developer claimed that its product operated within normal parameters. Intria-HP countered that it wouldn't tolerate any downtime in any product that it uses. In the end, the software developer conceded. "Our customers don't want to see heroics, they want things that work," says Somerville. "Sometimes you need weight to get carriers and vendors to deal with you, perhaps in a different way from what they'd prefer."

Occasionally, Intria-HP conducts a unique fire drill. Upon hearing an alarm, employees at a central site are ordered to leave the building and board buses. They're transported to another site where they transfer the network to the new facility and maintain it for up to 24 hours. "We're refining high availability all the time," says Somerville. "High availability is an attitude, and we have the same attitude as air traffic control."

**"Companies can't afford to have telecom-only or data-center-only people anymore. You need people thinking end-to-end systems all the time."** *–John Carrow*

### Outsourcing Options

If building and maintaining a network is comparable to air traffic control, then maybe such a feat is better left to experts. Network service providers AT&T Solutions, Digital Island, Exodus, MCI Worldcom and others have knitted together global networks, and now pitch them to companies as highly specialized services (see "Sending Data First-Class," *CIO,* Nov. 15, 1998). Internet companies that lack the resources to build networks and hire people to run them have emerged as early adopters; their business hinges on the reliability and scalability of their network.

Outsourcing is the wave of the future, believes Doug Nassaur, CIO at LinuxCare and former vice president of technical operations at E-Trade, which suffered sporadic outages last year, affecting about 20,000 E-Trade customers. "CIOs felt they had to build their networks, own the assets and worry about security themselves—and it cost them millions of dollars," he says. "A company like MCI Worldcom can build in much more redundancy than you can ever afford."

With so many loaded guns pointing at an online network, Hungry Minds, an internet startup in San Francisco that provides customized research and other information over the web, has chosen to outsource its network to Exodus and Digital Island. Hungry Minds attracts 3,000 unique visitors to its website every day—but its goal is 10 million. According to Bill Schaefer, chief technology officer at Hungry Minds, he can't reach this goal using an in-house network. He doesn't have the capital to build a network that can scale quickly and handle massive transactional spikes.

Schaefer publishes most of his web content directly to Exodus and Digital Island servers. Hungry Minds' five-person IS staff monitors the traffic and controls the distribution process using CA-Unicenter. For instance, Hungry Minds can take Exodus offline and transfer all traffic to Digital Island with a single mouse click. There's virtually unlimited capacity, and Hungry Minds pays per hit.

The downside: Hungry Minds designers and content providers can't make sweeping changes to the website in real-time. While some website content is stored on a secure server at Hungry Minds' headquarters, most of the static information resides on third-party data center caches. Despite these limitations, Schaefer is content with the tradeoff. "I don't ever want to have an eBay experience," he says.

"Outsourcing isn't a panacea," counters eBay's Webb. "It's about your flexibility and responsiveness." According to Webb, eBay's fate rests on complex features and functions of his web application and their ability to drive volume. And he doesn't want to give up any control.

Nevertheless, last year, eBay announced plans to expand its partnerships with Exodus and AboveNet Communications, a provider of internet connectivity. The two outsourcers host eBay's web servers, database servers and internet routers. "Having our technology hosted at Exodus and AboveNet will help us manage network capacity and provide a more robust web backbone," says Bob Quinn, eBay's CIO.

When it comes to high-availability networks, there's no single answer, just as there is no single point of failure. While CIOs implement best practices to improve their chances, it's still a crapshoot. Simply put, there are just too many factors that can bring down the network. The only sure things are planning and preparation. CIO

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Tom Kaneshige is a former staff writer for *CIO.*

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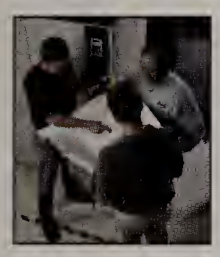

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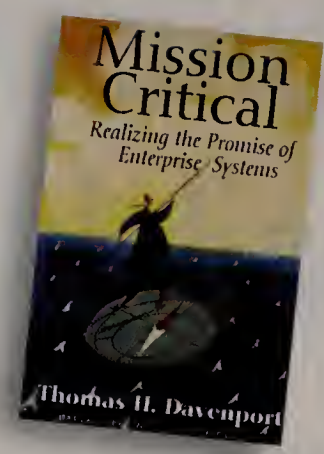
## STRATEGIC CONTEXT

Earthgrains' U.S. refrigerated dough products division is the only manufacturer of private-label refrigerated dough products in the United States. The company makes canned dough products that are sold in groceries' refrigerated section, including biscuits, dinner rolls, crescent rolls, cinnamon rolls, cookie dough, breadsticks, pizza crust and pie crusts. (I get hungry just listing them!) Dough products are marketed nationwide under more than 100 store brands. The refrigerated dough division competes primarily with Pillsbury, which, as the only branded manufacturer of refrigerated dough, dominates the category. Earthgrains' strategy is to copy Pillsbury's successful products with private-label offerings and to capture significant volume in the particular product. Sales for the division's refrigerated dough segment, including in Europe, were nearly $300 million, with margins of more than 10 percent, compared with approximately 5 percent in the bakery segment.

Senior managers in the U.S. refrigerated dough products unit chose to pursue a strategy of operational excellence, as opposed to taking a customer or product focus. Historically, however, the division had no integration between its order-to-cash, picking, delivery and accounts receivable processes and systems. There was no visibility into finished goods inventory if a customer had a question. And the company couldn't price an order until it was shipped, which significantly delayed the invoicing process. In addition, product forecasting efforts were hampered. Managers discovered that they had a shortage of manufacturing capacity only when the line ran out. On the sales side, management also had limited visibility of who its most and least profitable customers and products were. In general, then, Earthgrains' management lacked the detailed understanding of its business necessary to improve operations.

The refrigerated dough division had a clear strategy and was in a competitive position in the industry to achieve it. The management team also recognized what types of decisions had to be made to support the strategy so that there could be a direct connection between daily operations and strategic objectives. But because the division lacked the operational data it needed, there was no way to make the necessary decisions, much less measure their effectiveness in strategic terms. Finally, there were some other organizational capabilities needed to make the decisions necessary to support the strategy, as we will see.




**Mission Critical: Realizing the Promise of Enterprise Systems**
By Thomas H. Davenport
Harvard Business School Press, $29.95

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## TECHNOLOGY CONTEXT

Earthgrains' lack of operational data to support decision making changed with the implementation of SAP's R/3. Most of the enterprise system's modules had been implemented by early 1999, and the refrigerated dough division now has unprecedented visibility into its operations and customer base, which has dramatically changed its operations. Several modules were also installed in the bakery division, but so far deployment there has been more limited. In addition to the hardware and software technologies needed to create, capture and store the transaction data used to support decision making, several other technology elements are present:

### Data Communications

When transaction data crosses organizational boundaries, the communications technology needed to transfer the data between entities becomes an important factor. Earthgrains had invested considerable resources to develop its electronic data interchange (EDI) capabilities for the interorganizational transfer of transaction data.

### Data Access Tools

Earthgrains has given its 28-member sales force laptops to access highly detailed sales data now available through the enterprise system. This tool enables access to SAP data, but it also constrains the types of questions that analysts and managers can ask. For example, the vice president of customer services says, "SAP is good if you want to look at order X by customer by day, but it's very hard to use if you want to see five customers over three days."

Data access tools are probably the most visible example of software or hardware capabilities that can impede the use of transaction data. But other technical capabilities must also be present to support the data's use. For example, initially, Earthgrains' salespeople who worked remotely couldn't print any SAP outputs because they were not part of the company's computer network at headquarters. If not anticipated and resolved, technical barriers can inhibit the use of transaction data.

### Data Analysis and Presentation Tools

Earthgrains' business analysts use Microsoft Access and Excel to analyze the data and put it into a format that managers and salespeople will understand. Experience has taught the customer services VP that how data is formatted and presented to different types of end users means everything in getting it used. In addition, special decision-support software may also be needed for particular applications. Earthgrains loads data files into Manugistics, a supply chain planning and forecasting software package that it uses for analysis in a variety of ways.

### Data Context

Relevant data issues will vary significantly across organizations, but there are certain factors that can impede the use of data for decision making.

### Controlling Data Integrity

The ability to develop and maintain "clean" data is always important, but

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acceptable error rates may vary between industries. Integrity was less of a problem in Earthgrains' refrigerated dough division, where transaction data captured in the SAP system was created internally based on sales orders and shipping invoices. Whereas management could control these internal processes, the company's bakery division was trying to use scanner data from grocery stores to transform its distribution processes. Data from many retailers, however, had proved to be of variable quality, limiting its usefulness. Clearly, it is easier to control the quality of transaction data created within an organization rather than across entities.

## Synthesizing Data from Other Sources

Enterprise system transaction data must almost always be integrated with data from other sources, such as third-party vendors, to make it useful for management decision making. Earthgrains used census data combined with scanner data to analyze trends in different product categories and to try to interpret what was happening in the marketplace.

## Completeness of Data

To be useful, transaction data must include data elements (or fields) that can be usefully compared to provide insights for decision making. For example, if the system captures data on product sales, but the certain item cannot be linked back to the specific promotion under which the retailer purchased it, then the analytic insights from the transaction will be limited. Management must always think through in detail the types of data elements needed to address key decisions.

Complete data also means having adequate history to do analysis. Earthgrains needed a one- to two-year history of a retailer's inventory movement and stock outs before they could help the retailer make inventory management decisions. In many cases, just having transaction data isn't enough. It must exist for the right time period to be useful.

> In many cases, just having transaction data isn't enough. It must exist for the right time period to be useful.

## Timely Data Extracts

Transaction data must also be available in a timely fashion to support decision making. At Earthgrains, sales data is pulled daily from the SAP sales and distribution module. This allows the vice president of sales to identify problems early and take action before the end of the sales period. To be useful, data extracts must be available for analysis on a frequency that matches a useful monitoring and decision-making cycle.

# ORGANIZATIONAL AND CULTURAL CONTEXT

There are many potential elements of organization and culture that must be aligned to support a business unit's use of transaction data. The following are examples of how Earthgrains dealt with these challenges.

## Structure Supports Collaboration

Organizational boundaries can be barriers to the high levels of collaboration often needed to produce high-quality analytic outputs. At Earthgrains, both the sales and customer service departments in the refrigerated dough division have their own set

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of dedicated analysts who work closely with management, using SAP data to support decision making. Management needs to consider the complexity and ambiguity of the problems requiring analytic support. More complex issues, requiring sophisticated modeling and data analysis, are better served when analysts and decision makers are closely linked organizationally because of the high levels of communication and collaboration required.

## Realigning Reward Systems

Nothing undermines the use of transaction data faster than reward systems that discourage its use in decision making. Historically, the sales force in Earthgrains' refrigerated dough unit had been rewarded only for the quantity of products sold. After SAP was implemented, the compensation system was changed to reward salespeople 50 percent on sales volume and 50 percent on gross profit. This significantly changed the behavior of the sales force, who became much more interested in understanding the current and potential profitability of their customers. Reward systems that aren't aligned with management's objectives for creating and acting on insights from the data are a serious impediment to leveraging this resource. Several elements of Earthgrains' culture also supported the use of transaction data.

## Orientation to Change

The refrigerated dough division had a relatively new senior management team, with no emotional investment in the old ways of doing things. Thus, expectations regarding behavior changes were high.

## Data-Oriented Culture

The company's CEO was known by his colleagues as "data hungry." When he observed the information available from the ES, he noted enthusiastically, "It's like getting your head blown off with data." He had pushed hard to develop norms that would encourage employees to behave as members of a data-driven organization. In recent years, the quality of management reviews had improved 100 percent, according to one senior manager, because executives were now much more reliant on numbers in explaining their performance and investments. This behavior had trickled down throughout the organization so that salespeople were pushed to become users of data. Management assumed that if the sales force worked with the numbers themselves, they would be more confident in what they were presenting to customers.

> Nothing undermines the use of transaction data faster than reward systems that discourage its use in decision making.

## SKILLS AND KNOWLEDGE

A variety of skills and knowledge are needed to leverage transaction data for decision making. At Earthgrains, both the customer service and sales departments have teams of analysts whose combined skills include:

- Detailed knowledge of the unit's underlying business processes
- Strong knowledge of the grocery industry
- Extensive skills for interpreting the meaning of the SAP data, which requires understanding definitions of key elements, how they relate and their limitations for analysis

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The ability to interpret and analyze transaction data can change the types of decisions being made, the confidence management has in making certain ongoing decisions and even the location of some decisions within a business process.

- Thorough working knowledge of several analytic and data presentation software packages
- Strong interpersonal skills needed to train and support end users, particularly the salespeople, who were likely to become frustrated when they started working with the data

## Analytic Processes

All of the contextual elements described previously—strategy, technology, data, organization, culture, and skills and knowledge—combine to shape an organization's capabilities for data analysis. At Earthgrains, these combined inputs provided the motivation and ability to create five types of analytic outputs.

- **Standard reports.** The vice president of sales looked at a daily report that showed what products had been sold the previous day, in what volumes, their gross margin and the total sales for the year to date.
- **Simple analytic outputs.** Shortly after the sales and distribution module of SAP was installed, Earthgrains' management began doing basic customer and product profitability analysis. This analytical approach is simple, although it does require that the organization adopt a disciplined approach to activity-based costing in order to be successful.
- **Complex analytic outputs.** Over time, as management's understanding of the system developed, they began posing more complex queries to the analysts; for example, how much do sales actually increase as a result of different types of promotions?
- **Modeling.** Earthgrains had made limited efforts in this area, but had begun forecasting product demand to better plan their manufacturing capacity.
- **Onetime process analysis.** Integrating SAP data also supported one other different type of analysis. It enabled Earthgrains to evaluate the cash disbursements going through its accounts payable process in its bakery products division. This onetime process analysis provided support for management's decision to centralize all accounts payable activities from its 44 bakeries.

## Decision-Making Processes

Different analytic capabilities support different types of decisions and decision-making processes. Access to transaction data, and the ability to interpret and analyze it, can change the types of decisions being made, the confidence management has in making certain ongoing decisions and even the location of some decisions within a business process.

## New Types of Decisions

At Earthgrains, SAP data made it possible to identify which customers and products were most and least profitable. It is worth noting that although the data analysis revealed unprofitable customers and prod-

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ucts, the more important management decision was what to do with those results and how to do it.

### Increasing Confidence in Decisions

Using transaction data effectively sometimes means making decisions that were not possible before, but in other cases it can change the confidence level in decisions that were already being made. SAP data at Earthgrains provided new levels of confidence and support in making decisions about where to invest in promotions, where to invest in manufacturing capacity given expected product demand and where sales managers should be focusing their attention.

### Changing Decision-Making Processes

Finally, the availability of transaction data also sometimes enables major changes in decision-making processes and, notably, where decisions are being made. At Earthgrains, two processes were changed in distinctly different ways. The accounts payable process was centralized and standardized so that all invoices were paid after 28 days. In this case, payables decisions were not only shifted away from local bakeries but were also embedded in a series of decision rules that virtually automated the process.

In the refrigerated dough division, on the other hand, an attempt to implement a vendor-managed inventory process meant taking decisions about ordering away from buyers in the retail chains and embedding them in an inventory monitoring system managed by Earthgrains. In both cases, changing the location of decision making was intended to improve the effectiveness of the overall business process.

## OUTCOMES

Converting transaction data to knowledge is effective only if it produces business outcomes that improve financial performance, which usually happens as a result of new behaviors, new initiatives or redesigned processes.

### Changing Behaviors

Historically, disputed invoices have been a major problem for food manufacturers, since retailers often disagree with the prices they are charged on an invoice. Retailers always pay what they contend was the price agreed to, which is invariably lower than what is on the invoice. Because the cost of resolving disagreements is so high, manufacturers have traditionally lived with the deductions, which cost them millions of dollars each year.

Having easy access to invoice data and a clear transaction history has enabled Earthgrains to improve processes supporting price synchronization before the invoice is printed. The ability to minimize disputed invoices has reduced invoice deductions by more than $4 million annually.

### New Initiatives

With the ability to analyze customer profitability came a new initiative to change the product mix purchased by those customers identified as unprofitable. About 180 of these low-margin retailers were unwilling to change their purchasing patterns, and after 90 days the sales force in the refrigerated dough division was told to stop servicing them. At the same time, another initiative resulted in the elimination of 20 percent of the division's product line, which analysis had shown to be unprofitable. In the first year, the division's earnings jumped by more than 70 percent.

### Rethinking Important Business Processes

Earthgrains recognized that transaction data could create opportunities for redesigning fundamental business processes that create entirely new sets of decisions. For example, Earthgrains is using data from grocery retailer's inventory control systems, combined with historical data on stock outs, to set up a vendor-managed inventory process that significantly changes its relationships with retail grocers. Proactive use of transaction data may enable the redesign of core processes or it may simply improve decision making within the existing process.

Finally, SAP data made it practical to redesign the accounts payable process in the bakery products division. The decision to centralize and standardize this process increased the company's working capital by more than $40 million almost immediately and provided resources that could be used to support the division's strategy to acquire additional bakeries.

> Converting transaction data to knowledge is effective only if it produces business outcomes that improve financial performance.

Of course, not every management process supported by the use of ES data provides such significant returns. Many activities will have much less direct financial impact on the business. But one common characteristic of all the successful examples of leveraging ES data I have seen is that management demonstrates the political will to act and follow through in applying the new insights and capabilities made possible by better ES data. Business results will follow only in a culture that supports bold, proactive decision makers. CIO

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The Harley-Davidson CIOs 3: Cory Mason (kneeling), Reid Engstrom and Laurel Tschurwald

**By creating a new organizational model for IT, this manufacturer found an innovative way to align IS and business goals** BY MERIDITH LEVINSON

# Zen and the Art of IT Governance

Notorious for its deep growl, the V-twin engine is what gives the legendary Harley-Davidson motorcycle its kick. But it's more than that guttural sound (think "Leader of the Pack" by the Shangri Las) that makes a bike a Harley. It's the "ape-hanger" handlebars, the swashbuckling black-and-chrome styling and the low, king-of-the-road seat that define the hog. It's everything that says freedom from the everyday.

But it wasn't always that way. For years, the Harley-Davidson Motor Co. fought against the badass biker image so closely associated with its product, fearing that its straight, all-American customers would be turned off. But beginning in the '70s, after the company's production level had reached a new low, HD design director Willie G. Davidson (grandson of founder William A. Davidson) realized that not only were those roughriders the company's core constituency, but when it came to motorcycles, they were the early adopters, the thought leaders. Wherever they led, biking America would follow.

These days, from the beginning of the riding season in April to its end in November, HD employees, clad in the boots, leathers and jeans popularized by (among others) Marlon Brando in the '50s, park their flamboyant choppers along the side of the Juneau Avenue headquarters in Milwaukee, in front of signs that read, "No Cages" (cars).

As a 20th century icon, the Harley symbolizes countercultural, anti-establishment attitudes. It's no wonder then that the company should

The Harley-Davidson motorcycle wasn't developed in a vacuum (the first one was actually built in a shack), and neither was its IT shop. Learn

- How Harley's IT department mirrors the company's corporate structure
- How IT can gain a voice in the boardroom
- Why three CIOs may be better than one

PHOTO BY GREG GILLIS

inculcate those fundamental biker values into its corporate culture and reflect them in its organizational structure, which (it should come as no surprise) looks beyond the traditional, hierarchical, single CIO model for its IT shop.

Laurel Tschurwald, Cory Mason and Reid Engstrom share the same title: director of IS/CIO. Between them, they are responsible for all of HD's IS functions...and all three love their hogs.

Tschurwald, 44, is the best biker of the bunch (according to her boss, VP of IS and strategy David Storm). She regularly rips up the Milwaukee streets on her Fat Boy, the solid disk wheels glittering as they spin.

Atop his Ultra Electra Glide equipped with a radio and a luggage case, the burly Mason, 49, most closely resembles the classic Harley-Davidson rider with his salt-and-pepper beard and piercing blue eyes.

Tall and slender, the 46-year-old Engstrom cruises the blacktop in the low, stepped seat of his black Wide Glide, when not strumming one of his 10 guitars.

Together with the soft-spoken Storm (who owns three Harleys), the free-wheeling CIOs developed a unique framework for aligning IS and business goals. But just as HD's success began with that powerful, growling V-twin, the success of HD's tripartite IS leadership owes more to function than to form.

## See How It Runs

The organizational model of HD's IS department is nestled in the overall structure of the company as closely and comfortably as a biker in the saddle of his Road King. The 97-year-old motorcycle titan envisions its corporate structure as three overlapping circles in a Venn diagram. Each circle represents a core capability: manufacturing, sales and support. And each CIO oversees IS operations for one of these areas. Mason directs IS for manufacturing. In this position he is responsible for developing the applications and implementing the technologies for all of HD's manufacturing and engineering sites. Tschurwald does the same for the sales, marketing and customer service functions. As the director of IS for the support circle, Engstrom builds the infrastructure for HD's finance, human relations, communications and legal departments.

Although each CIO is in charge of IT for his or her own circle, they share administrative responsibilities such as recruiting staff, fixing the budget and setting departmental goals. In addition, Tschurwald and Engstrom share responsibility for HD's sites in England and Japan. Engstrom takes care of infrastructure issues, while Tschurwald handles the marketing and sales applications for those two sites.

## The Magic of 3

**THE NUMBER 3** is endowed with great historical significance at the Harley-Davidson Motor Co. (not to mention the rest of the Judeo-Christian world.)

It was the three Davidson brothers—Arthur, Walter and William—who, along with William S. Harley, founded the company in 1903. That same year, they built their first motorcycle. Today, the Milwaukee-based company is structured along three core competencies—manufacturing, sales and support—that were established in 1993. Three CIOs share the responsibility of directing architecture and IS strategy for the company. Each of these CIOs oversee the IS operations for one of these competencies, and they have established three councils to unify IS and business goals. They rank the success of their IS projects along three "key results areas," which are invest in the business, enable the workplace and engage the people. *–M. Levinson*

Tschurwald is also responsible for network and desktop support at HD's Milwaukee headquarters, but Mason and Engstrom are always available to lend a hand.

With Storm, the triumvirate forms the Information Systems Leadership Council (ISLC). The ISLC is one element of the framework they've built to make their delivery of IT to the company consistent in terms of standards and strategy. At the beginning of each fiscal year, the trio sets the strategic goals for the IS department, checking them against the business goals.

"Linking IS to strategic planning gives IS a big voice in the boardroom," says Storm. The ISLC meets on a monthly basis to discuss the status of business transformation projects, like the migration to an n-tier environment (a distributed, scalable, web-enabled computing architecture) that's currently underway. Engstrom, responsible for support infrastructure, is leading the project.

Given the "VP of IS" in Storm's title, and the fact that Tschurwald, Mason and Engstrom report to him, it would be easy to call Storm the CIO. But he has neither the title nor the function. Storm is a strategic planner whose role is to evaluate whether IS goals are aligned with the company's business plan. "Dave has the top spot as the vice president and the person that we tie into at the leadership level," says Tschurwald. "But," Engstrom clarifies, "as a business strategist. He doesn't set our [IT] strategy or dictate what our architecture is."

The success of the distributed leadership model is due in part to Storm, who enforces it at the executive level. Mason explains that when it was inaugurated in 1995, the VPs of the various circles

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(manufacturing, sales and support) initially approached Storm rather than the three CIOs with their IT problems. Storm insisted that they talk to one of the CIOs. If you want this to work, says Tschurwald, "you've got to have an executive pushing the model."

In addition to the ISLC, the quartet established two other councils: the Information Technology Council (ITC) and the Information Systems Managers Council (ISMC).

The ISMC is made up of 12 IS managers who report to Tschurwald, Mason and Engstrom. The ISMC manages and executes projects. For example, the ISMC set up the work plan to convert the company to the n-tier architecture. It led discussions about the tactical issues surrounding the move, such as training staff, "sunsetting," or phasing out legacy systems, and scheduling when and how the new system would become operational. Mason points out that the ISMC is different from other companies' IS steering committees and executive oversight committees because it is run by managers. This way, says Mason, the people who have to execute and sustain the decision—say, to go with a particular vendor—are not left out of the decision-making process. Indeed, they are the decision makers.

While the ISMC is responsible for the business of IS—operations like drawing up schedules and selecting architectures—the ITCs make sure that IS is aligned with the mission of the company. Each circle has its own ITC. The ITCs are composed of non-IS managers who report to the vice presidents in a particular circle. The ITCs assign which IS initiatives their circle will undertake by reviewing business cases and work plans for projects. Additionally, the ITCs are responsible for prioritizing IT projects, allocating how each circle will spend its IT budget for the year and determining the number of people required to execute a project. If an IS initiative comes about as a result of a business need, it begins in the ITC.

Whether it's building bikes or an IS department, HD applies one theory: the whole is greater than the sum of its parts. But, again, it wasn't always that way.

## Customizing the IS Hog

In 1995, HD had a harried and haggard director of IS, Rich Kolbe, who reported directly to the president. Storm, who joined HD as its director of operations strategy and support in 1992, believed that the CIO job had become too big for one person. Storm thought creating an interconnected, mutually dependent group whose members would share the risks and responsibilities associated with the IT function would prevent CIOs from burning out. He also figured that the company could see results on major projects faster if there were more manpower. And, he thought, what better way to organize the IS

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group than along the lines, or rather circles, of the entire company?

It was then that Storm made Kolbe CIO with responsibilities for support, and promoted Tschurwald, who was running an HD subsidiary in Cleveland, to CIO for sales, marketing and customer service. Storm then set out to convince Mason, who was working as director of planning worldwide IS for S.C. Johnson Wax in Rancine, Wis., that this CIO triumvirate could work.

Mason, who was looking to move up to CIO after 23 years at S.C. Johnson Wax, was skeptical when Storm asked him to take charge of IS in manufacturing at HD as one of three CIOs.

"I thought, You've got to have someone who's the CIO. One person has to make all the decisions," recalls Mason. It was Storm's argument about the high CIO burnout rate and the size of the job he was offering that convinced Mason that it was worth a shot—not to mention, he jokes, "multiple blows to the head from Tschurwald." But Mason was also intrigued by the potential to create a new form of leadership in his profession. "If you could have that kind of a model at the executive level, it had the potential to be very powerful in terms of sharing ideas, experience and responsibility," he says.

**"I thought,** You've got to have someone **who's the CIO.**

In the winter of 1998, Kolbe peeled out of the parking lot to become a solo CIO at Gidding and Lewis, a supplier of industrial automation products and machine tools based in Fond du Lac, Wis. With Kolbe's departure, Tschurwald and Mason asked themselves whether they wanted to divide up the job between them or continue with the tripartite model. They decided that a threesome made the most sense given the way the company was set up. In August, Engstrom, who had been at HD for three years as manager of architecture integration on the infrastructure side, made them a troika once more.

The three CIOs acknowledge that managing their IT operation sometimes requires that they park their egos on Juneau Avenue along with their bikes. In fact, says Mason, "Our managers expected this to be a survival of the fittest thing, where the strongest person would emerge as the CIO."

That might have been the way it would have worked at another company. It's not the way it worked at HD.

## A Whole Lotta Love

Tell the truth. Keep your promises. Respect the individual. These are just a few of the values that are posted on the walls of every conference room at HD headquarters and taught during a week-long orientation for new employees called "Root Learning."

"These values speak to our belief that our employees are our greatest asset," says Tschurwald. Storm agrees. "In the long run, your only competitive advantage is people. There's nothing magical about technology or styling that somebody else can't steal." These values are also the principles that guide the way Tschurwald, Mason and Engstrom work together. They all agree that respect for their differences is perhaps the single most important aspect of their relationship and accounts for their success as a group. "We value these differences, and we leverage the hell out of them," says Mason.

An example of this is how they developed their strategy for migrating to an n-tier architecture, which they delivered last October.

Given her experience running the Cleveland subsidiary where she oversaw the development of transaction processing software, Tschurwald views IT projects from the perspective of their effect on the customer. Mason, she says, saw the n-tier architecture in the context of IT evolution from mainframe to personal computer to client/server to n-tier.

"I told him," Tschurwald says, "Business people don't care about that! They care about the value that will be delivered to the business as we invest more in this new architecture." Engstrom, who's in charge of wiring the company together as the infrastructure guy, was able to see the importance of both sides and fuse them into a complete strategy that included training staff and getting rid of legacy capabilities.

"When we were done," says Engstrom, "the strategy showed the imprint of all our personalities."

Engstrom's, Tschurwald's and Mason's cubes are located right next to each other, so they are in constant contact. That's another way that they stay on the same page and ensure that IT initiatives deliver value to the company. "After getting their feedback, I can act in a manner that is consistent with the goals of each of the circles," says Engstrom.

One person has to make all the **decisions."**

-DIRECTOR OF IS/CIO, CORY MASON

For this leadership model to succeed, Storm says the individuals involved "have to be willing to subsume their own ambitions somewhat." Mason echoes this idea and adds his own twist. "It's not important whether one of us gets to the board of directors. What's important is that IS has gotten to the board of directors."

Mason and the others believe that this governance model could be a model for everyone. He points out that most IS professionals grow up working in a collaborative environment. But, "Once you get to the senior executive level, you're all alone. That doesn't make a lot of sense given the way that you've learned to interact with people as a team. A partnership model just makes so much sense to me in our profession." CIO

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Staff Writer Meridith Levinson doesn't ride, but if she did, it would definitely be a Night Train. E-mail her at *mlevinson@cio.com*.

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# So You Want to Write a Book

*For the information executive seeking to establish credibility as a consultant or thought leader, nothing beats the credential of a book in print. Do you have the stuff to write one?* BY PERRY GLASSER

**Robert Thierauf**
*Thirty-one books and counting*

*After a day when* the phone rang every thirty minutes with some new calamity demanding your attention, you might have gazed out the window and thought: *Sheesh, I could write a book!*

Well, could you? Do you have the time, the skills, the expertise, the connections? If you've ever thought of hanging out a shingle and being your own boss as a consultant, nothing beats a book to establish credibility with clients. Ahhh, sweet dreams of independence! What does it take to become the next Tom Peters or Peter Drucker?

Robert J. Thierauf knows. The professor emeritus of information systems at Xavier University in Cincinnati is the author of 31 books about business and IT. We're not sure how he finds any, but in his spare time Thierauf is a regional director of the 7,000-member Rolls Royce Owners Club. We spoke to him about his work just before his departure for a Rolls Royce rally in Cleveland.

**CIO: Where do ideas for an IT book come from?**
**Thierauf:** Ideas come from the current literature and from talking to experts in the field. I go to different conventions, meetings and so forth. But my real push for new ideas comes from the literature. I go through 200 computer-related magazines every month. I try to get a feel for what is going on in the field, the trends in terms of new ideas, new types of systems. Then I create research files and break them down into different categories. But I won't write about a topic area that I have no interest in. I write about things that really excite me, get me going.

PHOTO BY TED W RICE

**How long does it typically take for one of your ideas to get into print?**

In late August 1999 I sent my publisher my 32nd book proposal—a detailed preface indicating the need for the book plus a 15-page outline. They gave me the contract. The book's due at the publisher June 1, 2000. It takes me about one year to put everything together and then about half a year for it to get into print. That's my particular time frame for a typical book in the fast-changing computer field.

**Do you write daily?**

I normally write in the morning for two and a half to three hours and then do errands, work out at the YMCA and stop by at the university. Sometimes I write in the evening if I'm running behind. I have no research staff because I know exactly what I want, and therefore I can do it faster than if I try to tell somebody else how to do it for me. I research mostly by telephone and write everything on yellow pads. I type it myself because my handwriting has gotten so

bad even I can't read it sometimes. Also, typing allows me to do an extra revision. I'll say, "Gee, that wasn't too clear, let me go back and do this and that."

**How do you manage the time to write all those books?**
I don't use e-mail.

**When writing, do you have a specific audience in mind?**
I write for the practitioner. All the research I do is from the standpoint of the practitioner, though there is some underlying theory. Practitioners are people with a problem. They've heard about some new technology—for example, OLAP or knowledge management systems—and want to know more about it before they start a project for their organization.

When they pick up one of my books they'll find the first part focuses on theory, while the second part describes applications in the typical areas of strategic planning, marketing, manufacturing, finance accounting and human resources. A person in marketing will probably read the chapter on marketing first. Then he or she may go back and read other chapters. There's usually a chapter on the historical development of the particular system too.

**What advice would you give to a beginner who's about to start the writing process?**
Start with research files. You can do research on the internet, but you really need to sit down and read article after article to get a good feel for what's going on. When I begin writing I have everything already done in terms of research.

**Let's move to the economic side, marketing and persuading a publisher to print a book. If I'm thinking of striking out on my own as a writer, what should I do first?**
If you're a brand-new author, you'll have to go beyond simply writing a couple of sample chapters for the publisher. You will still write and send the chapters. But then they'll have sample readers look at them, and those people won't like this, and they won't like that, and the publisher will tell you they're not going to pursue the project because of a particular problem with your manuscript. I recommend going to just one publisher first, getting some feedback immediately and then rethinking the whole approach. Don't bother sending out a whole bunch of stuff to different publishers.

**How should I choose that one publisher?**
Suppose you are looking into data warehousing. There are proba-

bly already 30 books written on the different facets of data warehousing. Choose a publisher that is already publishing in that area. And, of course, you've got to show how your book is better than the ones out there because of things you've done differently. But the real problem isn't choosing a publishing house, it's the editors. A bad editor will tell you to make changes based on the sample readers' feedback, but if one reader suggests one thing and another says the complete opposite, what can you do? The editor has to be firm. And a good editor knows the field thoroughly.

## Number 31

*Read the latest*

Robert J. Thierauf's most recent book is entitled *Knowledge Management Systems for Business* (Greenwood Publishing Group, 1999). The 376-page book can be purchased for $75 by direct order from the publisher at 800 225-5800, at *www.greenwood.com* or at any bookstore or major online bookseller. It includes chapters on how to apply the organization's knowledge to marketing, human resources, finance, manufacturing and strategic planning.

**What kind of financial benefits can a beginner expect for a first or second book?**

In the past I've gotten advances of about $3,000, but there have been so many mergers among publishers that they don't have to compete against one another for writers as much, so advances may be lower. But I've made more than half a million dollars from my books over the years. My book entitled *Decision Making Through Operations Research* was first published in 1970. Today the field originally called operations research is called "management science." That book went through several editions and into many languages and has sold roughly 100,000 copies. Today there are many titles out, and so much competition that the chances of selling that many are really about zero. So you're talking maybe selling up to 10,000 copies these days. Book sales have really dropped off badly for everyone.

**If you had to give a single bit of advice to someone who was hoping to write his or her first business text, what would that be?**

Always start with materials you know best and are easiest for you. Develop a very detailed outline and start with the easiest chapters first. When people start on the most difficult things, they often get discouraged. CIO


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# Wired for Justice

BY SANDY KENDALL

Finding evidence in the rubble, building cases amid chaos, the World Court is leveraging IT to help hold the butchers of Bosnia and the criminals of Kosovo responsible for their sins

PHOTO BY GEORGE MERRIMAN/MAGNUM PHOTOS

# ce

**The rutted streets** shake the U.N.-escorted van that methodically travels up and down every lane, street and avenue in Peć, Kosovo, in the Republic of Yugoslavia. From the van, four pairs of unblinking electronic eyes take in the broken windows, the burned cars and the stucco walls dotted with bullet holes, and commit it all to memory. Digital memory.

The City Server, a GPS satellite-tracking vehicle, has digital cameras mounted front, back, on both sides, and on each corner, eight in all. For six weeks in the fall of 1999 it cruised every street of Kosovo's war-torn villages and towns, taking a picture every 3 meters. The digital cameras streamed data into an onboard computer to produce a seamless, close-up mural of the war zone. Later, the images will be matched to existing GPS-coded maps and satellite imagery to confirm the exact location of the destruction—a pictorial butcher's bill for the civil war in Kosovo.

Learn about

- How the crimes committed in Yugoslavia are being prosecuted
- IT's role in international law
- Cutting-edge courtroom technology

The vehicle, driven by an employee of the German company Tele Info Digital Publishing, was contracted by the IT department of the International Criminal Tribunal for the former Yugoslavia (ICTY) in The Hague, Netherlands, to record visual evidence of possible war crime scenes before they could be covered up or destroyed.

This is just one of the IT tools employed by those trying to bring to justice the individuals responsible for war crimes committed during the grisly dissolution of Yugoslavia. In the ensuing chaos, the work of acquiring, analyzing and managing information was (and still is) formidably hard. But it had to be done.

## Background Briefing

Yugoslav dictator Marshall Tito's death in 1980 marked the beginning of the country's end. After Tito, the six federated socialist republics that composed Yugoslavia (Slovenia, Croatia, Serbia, Montenegro, Bosnia and Macedonia) participated in a joint, rotating presidency—the leader of each republic serving for one year. As the decade wore on and the influence of Soviet-style communism waned along with the power of the Soviet Union, nationalism reemerged in Yugoslavia's various ethnic pockets and politicians, like Serbia's Slobodan Milosevic, used it as a vehicle in which to ride to power.

Slovenia seceded from Yugoslavia in 1991 after a very brief battle; then Croatia attempted to secede and take with it the land in Bosnia inhabited by ethnic Croatians. That devolved into war between Serbia (claiming to be protecting the integrity of a united Yugoslavia) and Croatia. The battleground became the republic of Bosnia-Herzegovina, with both Serbia and Croatia trying to grab territory. In 1992 the outside world stepped in to try to stop the fighting. Several approaches were tried, and finally the American-brokered Dayton Peace Agreement was signed, under which an edgy peace held until the smoldering tension between the Serbs and Albanians living in Kosovo flared into ethnic cleansing.

And it's really much more confusing than that.

In 1993 the U.N. set up ICTY, instructing it to "prosecute persons responsible for serious violations of international humanitarian law committed on the territory of the former Yugoslavia since 1991."

And in February 1997, Kate Greenwood, whose education is in both law and IT, came to ICTY from the office of the attorney general of Australia. Now ICTY's chief of information and evidence, she says, "My international law lecturer in school said, 'International law isn't really law; no one ever goes out and arrests anyone under international law.' But my first year here, they did just that," taking into custody nine indicted war criminals and bringing them to trial.

The U.N. provided some procedural guidance in a formal document outlining the duties of the Tribunal, but, for example, the section on the process of investigating a crime and obtaining an indictment takes up less than half a typed page. Christian Chartier of France, ICTY's head of public information, recalls, "Early on, one judge said to me, 'I feel like a pioneer; this is the

"Kosovo was one
scene; you can't
number of crimes

–DEPUTY PROSECUTOR GRAHAM BLEWITT OF THE I.C.T.Y.

huge crime
calculate the
committed."

forest. We're facing a huge territory and have to find out where the borders are.'"

Deputy Prosecutor Graham T. Blewitt, also from Australia, who was appointed in February 1994, remembers the Tribunal's early days. "It was really a question of determining where to start. The judges had already been appointed. They were here and wanted to hear cases, and of course the prosecutor had the mandate to do the investigations and to bring the cases. But until there were indictments, the judges were sitting there twiddling their thumbs, so they were putting the pressure on." And until enough information and evidence could be gathered to support accusations, there could be no indictments. When ICTY started its work, the fighting was still intense, as Croatia and Serbia trampled over Bosnia-Herzegovina. The Tribunal's small original staff had to set up all its organizational procedures and operational processes, hire enough people to get going and determine what technologies were needed to support their work. Blewitt, adds, "There were no guidelines; there were no precedents." Not to mention no money for consultants. "We had to create something from nothing, and do it in a very skeptical world, but in a world that was demanding action."

The initial technology decision was to have as paperless an office as possible. "Rightly or wrongly, we decided to go on a networked PC basis," recalls Blewitt. "And we chose what was considered the best way to go, namely a Windows platform. We started with 386s, the best that was available, but we were never able to keep up with the advancing technology." Only recently has the Tribunal upgraded to Pentium processors that can run Windows NT.

ICTY now uses NT servers and workstations all around, running on switched/shared 100BaseT ethernet through an ATM backbone. Several services are run on Linux or SCO Unix servers, and there are a handful of Sun Sparcstations and Power Macs in use. In the near future, Tribunal IT staff expects to incorporate an IBM-donated AS/400 server (see "Paved with Good Intentions," Page 144).

## Real-Time Law Enforcement

The crimes that the Tribunal was charged with prosecuting had, for the most part, occurred before the Tribunal's foundation, though the fighting continued until 1995 (and then broke out again last year). Investigators often had to return to the scenes of the crimes after witnesses had scattered and sites had been purposely altered or shattered by subsequent battles and bombing.

Still, investigations have yielded massive amounts of information as well as 91 indictments and 37 detentions to date. The Office of the Prosecutor's (OTP's) plan during its pioneering stage was to have a document management system in which every page of every document seized as evidence would be scanned and coded with a unique number. Whenever a document was copied or photocopied, this number would show where it came from, its source and whether it had been used in another case. It proved too expensive for the Tribunal to purchase a ready-made system that could do all that, so it developed its own document management system as well as indexing databases and relational databases. Blewitt notes that they've fallen short of the ideal of cataloging every document. "We might go out and execute a search warrant, for example, in Bosnia, and come back with literally hundreds of thousands of pages," he says. A small percent-

PHOTO BY GEORGES MERILLON/LIAISON AGENCY

**The ICTY Team** *(from left) Deputy Prosecutor Graham Blewitt, Chief of Electronic Support David Falces, Chief of Information and Evidence Kate Greenwood*

age of OTP's document holdings are in the database, selected with input from the trial teams who indicate which material they need for particular cases. "The database grows and grows but doesn't have everything in it," laments Blewitt. "We've always been playing catch-up."

In the spring of 1999, the tenuous peace of the Dayton accord dissolved when fighting broke out between Serbs and ethnic Albanians in Kosovo. Blewitt says that after the fighting, "Kosovo was one huge crime scene; you can't calculate the number of crimes committed." In that environment, and with the prosecutor's small staff of investigators—only 85, and many of those still working on cases stemming from the fighting in Bosnia—it would clearly be a challenge to gather evidence.

However, in contrast to Bosnia, ICTY had its procedures and staff already in place, allowing for what former chief prosecutor Louise Arbour (now on the Canadian Supreme Court) called "real-time law enforcement." "Confronted with virtually a million refugees," says Blewitt, "we were able to identify key people fairly quickly, take their statements, get a broad idea of what crimes had been committed. Even as the [NATO] airstrikes were going on, we were making preparations to go in immediately with KFOR [the U.N.'s Kosovo peacekeeping force] to get to the forensic sites before they were damaged." That was particularly important because perpetrators have made a greater effort to destroy the evidence of their crimes since the establishment of the Tribunal.

Though investigators were on the ground more rapidly than they were in Bosnia, much of the evidence they collected was still fairly low-tech, such as written or recorded statements from victims and witnesses. The Tele Info van, on the other hand, illustrates the capacity for IT to assist in the investigation of such widespread and calamitous devastation as Blewitt describes. Once the geocoded visual data from the vehicle's eight cameras is downloaded (to a Netfinity server that IBM donated to the Tribunal), investigators or trial attorneys can use a PC to call up a specific street address or global coordinates and have a dated visual image that will show whether buildings were burned, bullet-riddled or defaced.

This particular technological twist has served two main needs of the investigative process: operational intelligence and actual evidence. For example, if a witness says his village was burned in a specific way, say, they burned the butcher shop and destroyed the post office but didn't destroy three houses across the street because they belonged to Serb families, investigators can use the seamless pictures of the village to verify the claim. That's operational intelligence. Using the visual account to corroborate testimony is extremely important in discovering whether people have told the truth or remembered accurately, and therefore how likely it is that they are telling the truth about other things.

The second and even more important use of the photographic data is to provide evidence, an objective measure of the amount of damage done within Kosovo overall. Tele Info's system was a relatively quick and inexpensive way to do it, according to Paul Risley, spokesman for the prosecutor. In December 1999 the first processed tapes from the van came to the Tribunal and, according to David Falces, chief of the ICTY's electronic support services and communication section, they "appear to provide an accurate wraparound image of the area just after the NATO troops assumed control of the province, and they do show widespread destruction of property."

## IT in the Trenches

As in most organizations, demands on IT workers at the Tribunal continually fluctuate and mutate, often unpredictably. For example, as Greenwood notes, "There is no statute of limitations on genocide." An indictment might be two years old and appear to be languishing when suddenly the accused is captured and the case needs to be brought up-to-date quickly—assembling evidence for prosecution teams, locating witnesses who may be all over the globe. Greenwood's unit employs 67 people, a mix of IT staff and IT users.

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World events also affect demands on Tribunal IT. When hostilities erupted last year in Kosovo, information began pouring in as investigators tried to stay on top of events. The OTP set up a temporary evidence-processing facility in Skopje, Macedonia, to receive and process tens of thousands of items recovered in Pristina, Kosovo, most of which was in document form. "1999 had already seen a massive increase in the evidence processing workload," says Greenwood. "The Kosovo materials represented a further increase amounting to a quarter of the previous year's entire evidence processing workload, and it had to be completed within 11 weeks."

"We were totally slammed," says David Falces of his department, whose 45 members include 22 in IT, seven in communications, 13 in court operations and audiovisual and three in administrative support. "We had to support the sudden establishment of three new field offices [Tirana, Skopje, Pristina], at the same time continuing our operation in The Hague. Not to mention our Y2K program."

The fighting in Kosovo had a ripple effect by flooding Greenwood's information and evidence section, which is probably the biggest customer of the Tribunal's broader IS department. "But three-quarters of what we're their biggest customer for, I can't talk about—operations," says Greenwood. The OTP jealously guards the details of its internal systems and workings in order to safeguard the integrity of its investigations.

## Secrets in the Silos

"The worst thing to happen," says Blewitt, "would be for someone to be able to hack into us and expose the fact that, hey, guess what? Here's a list of sealed indictees and we got it from the prosecutor's network."

David Falces points out further gradations of that fear. "Even [using an internet] system that's—quote unquote—100 percent reliable could undermine our work. So many major sites have been hacked—NATO, for example—that even if nothing sensitive was or could be hacked here, we'd have a perception problem. Witnesses might not come forward; indictees might not turn themselves in." The NATO site was crashed during the fighting in Kosovo when it was deliberately flooded with more e-mail than it could handle, allegedly by Serbs angry over NATO's bombing of Belgrade.

The Tribunal is different from enterprises that today are knocking themselves out trying to integrate and get rid of silos. "We've always insisted on separate and discrete standalone networks—we *want* that—and we won't allow any external access to [ours]," says Blewitt. This strict separation of the OTP makes life a little inconvenient. Even investigators in the field, who are OTP staff, cannot dial in to the network; the prosecutor herself could not access it from outside the court building.

# Paved with Good Intentions

*How IBM's good intentions went nowhere fast*

IN THE SUMMER OF 1999, IBM made a generous donation of equipment to the United Nation's war crimes tribunals for Rwanda and the former Yugoslavia. For Michael Johnson, it meant a crash course in the torturous subtleties of high-tech export licensing.

Johnson, Merrimack County district attorney in New Hampshire, was one of a handful of American prosecutors to go to the Tribunal to help with a backlog of cases. Working closely with the Office of the Prosecutor (OTP) in The Hague, Netherlands, the Americans confronted an organizational challenge far greater than most U.S. prosecution offices could imagine. It wasn't that the caseload was that high. But the magnitude of information behind each case was staggering. "And they were doing all this with technology that has been patched together as the task has ballooned in the last three to four years," Johnson says.

The prosecutors returned to the States determined to do something to help the two Tribunals. They formed a not-for-profit foundation called the Criminal Justice Resource Center *(www.internationaljustice.org)* to enable tax-deductible donations and to underwrite or organize donated shipping. Polaroid donated 20 investigative camera kits, including forensic-quality cameras and film—essentially digital cameras whose output can't be doctored. So far so good.

Then came a real coup. IBM made a donation early in 1999, initially worth $750,000 but ultimately reaching $3 million, the largest donation from a private source to the Tribunal. Johnson says, "This would never have happened but for the dedication of John Boyle," former consumer solution executive and public safety consultant at IBM. Boyle pushed IBM, all the way up to CEO Lou Gerstner, for the donation of four AS/400 servers, a resource used by many U.S. law enforcement organizations, along with workstations, software and training.

Doing the right thing, however, was only half the battle. Because of the Tribunal's security needs, the AS/400 had 128-bit, or strong, encryption, and strong encryption required a special export license.

In August 1999 the servers went on display at a press conference in Boston. They were supposed to go straight from there to their new home in The Hague. They didn't. Instead, they went straight to a storage facility in Concord, N.H., and waited there for permission to ship. Johnson and a few other prosecutors spent the next few months fussing over the required paperwork and, with the help of the office of U.S. Ambassador for War Crimes Issues David Scheffer and the Department of Commerce, finally obtained an export license in October 1999.

By then, however, the Tribunal's IT staff was reluctant to adopt the new technology during the tense home stretch of Y2K anticipation. And the shipping, also donated, would now have to wait for the Christmas rush. Meanwhile, Johnson's group is raising money to pay for the training.

At press time, the four AS/400 servers were still safe and sound and, unfortunately, stateside. *–S. Kendall*

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Complicating matters further is what Greenwood calls the almost schizophrenic need to balance security and transparency. "One of the hardest, most interesting things is that we have to protect witnesses and people doing investigations, but because we're a public organization and need our results known, we have to be open." For OTP staff, that means literally having two computers on their desks, one for OTP and one for the rest of the world, including other Tribunal departments.

As part of the goal to be as open as possible, Chartier's unit developed a website, *www.un.org/icty*. "It's not great," he says, "but it gets the information out there; it does the job." Press releases are posted and archived there, as are proceedings of the court, so anyone interested can follow a case to see when an appeal has been filed and so on. There are no photos or interactive bells and whistles.

## The Digital Courtroom

All the work of the Tribunal comes to a head in its three courtrooms in The Hague. Visitors and press pass through two sets of metal detectors before entering the gallery and picking up a wireless headset that can be tuned to English, French or BCS (Bosnian-Croatian-Serbian). Sound- and small-arms-proof glass separate the gallery from the actual courtroom, which is dignified, modern and simple, but wired to the hilt.

Many people are familiar with photos and footage of the Nuremberg courtroom—large, teeming with people and every flat surface covered with papers. ICTY's courtrooms seem spare by comparison, and far more security-conscious.

A panel of three robed judges faces the gallery from a raised platform. Just in front of them sit the court stewards and stenographers. Facing the judges, with its back toward the gallery, is the witness stand. With defense on the gallery's left and prosecution on the right, the legal personnel occupy tables angled to face both judges and witnesses. Behind the defense, the accused sits at a desk, a guard on either side. One can study the accused, looking for a revelation of evil, but for the most part they are decidedly ordinary-looking men. Even Goran Jelesic, a former agricultural machinery mechanic who allegedly called himself the "Serb Adolf," looks harmless as the monitor displays a series of photos of him shooting men in the backs of their heads as they walked down the street under his guard.

> "The worst thing would be for someone to be able to hack into us."
>
> –GRAHAM BLEWITT

**Guilty** *Goran Jelesic, the "Serb Adolf," is sentenced to 40 years.*

Jelesic pleaded guilty to 31 counts of crimes against humanity and violations of the customs or laws of war. He was acquitted on one count of genocide. On Dec. 14, 1999, he was sentenced to 40 years' imprisonment, the Tribunal's harshest sentence to date.

Jelesic's monitor, like those on the desks of the judges, lawyers, stewards and witnesses, displays evidence being referred to by either side. What brings the evidence to the monitor is a souped-up overhead projector called a visualizer but more fondly known as Elmo after one company that makes them, Elmo Europe of Germany. From its place next to the witness stand, Elmo doesn't actually project but transmits to the computer monitors a live image of a piece of evidence placed on its surface—a map, say, or an article of clothing.

The early post-World War II building that houses the Tribunal required retrofitting, particularly for security, but also to accommodate courtrooms. The judges and technology staff worked together to design the most efficient courtroom possible. They studied other courtrooms around the world and developed policies for the use of technology. For example, they found that in most courtrooms a great deal of time is spent handing out exhibits and flipping through pages, which could be alleviated if the exhibits could be called up on everybody's computer screens at once by the court steward.

The courtroom R&D was conducted at the time of the O.J. Simpson trial in the United States, which ironically influenced ICTY planners because they recognized the parallel with their proceedings: high visibility and gruesome content. In fact, the clunky computers used in the California courtrooms inspired the Tribunal's design team to lower the monitors into the surface of the desks, enabling courtroom personnel to see over the tops. It was very important to the judges that the technology not dehumanize or dwarf any of the participants.

When the trials began in 1996, the ICTY courtrooms were the most technology-rich

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working courtrooms in the world, using both off-the-shelf and custom-made software. Besides displaying exhibits to all parties simultaneously, the system features a real-time court-reporting product from LiveNote, a Philadelphia-based software company, which immediately makes available the stenographer's transcript in English. The transcript is searchable so that, for instance, a lawyer can check back through testimony to discover conflict or corroboration between witnesses. Also, using LiveNote in conjunction with a program called Premier Power, judges and lawyers can annotate their copy of the transcript or mark passages with keywords for reference later in developing verdicts, opinions or further questions. LiveNote programmers modified the commercially shipped version for the Tribunal in order to display time coding. That makes it simpler to make redactions from the transcript when needed for witness protection. (For example, if the sex of a witness is supposed to be unknown, but a judge accidentally uses a gender-specific pronoun, that will be edited out.)

The technology staff had to push hard to get all the equipment needed for the first courtroom to be wired. For each piece of technology, they had to establish how it would or could improve the functioning of the court. When planning the courtroom's video capability, for example, IT pushed for digital 8 cameras and at first met with some resistance: "Why do you need such an expensive video camera in here—I've got a great one at home that cost only a thousand dollars," a judge (who had to approve the expenditure) said. Slowly the reasoning for the need for high-quality equipment became clear to even the most recalcitrant technophobes. (For example, the digital video recorder was needed to transfer evidence that might come in the form of low-quality home video to digital tape to stabilize it for copying and storing; a Boss VT-1 Voice Transformer could be used to alter the voices of witnesses to protect their anonymity.)

**Wired Courtroom** *The clunky computers used during the O.J. Simpson trial inspired the ICTY planners to lower their monitors.*

The courtroom work is the most enjoyable part of the IS staff's job, says Falces. "It's like television and IT combined." Indeed, a videotape of the proceedings is in constant production—played live on gallery monitors and aired with a half-hour delay for broadcast pickup or for compulsive cable TV court-watchers. (The half-hour delay allows for redactions to protect witnesses.) Before any cases were heard, judges had to decide whether the courtroom would even allow cameras. In some countries in which judges, lawyers or witnesses live it is not legal. In the Netherlands, where the court is located, it is not legal. But the judges decided that the overriding importance of making the world aware of the trials justified the presence of cameras. They set guidelines. The video director, who requested anonymity for this article, says he will not focus on a crying or traumatized witness beyond the second it takes to record that emotion and communicate what is happening in the courtroom. Likewise, although the camera turns to the accused occasionally, it does not linger. Like much else at the Tribunal, the production must walk a fine line of legal functionality and public interest.

## A Qualified Success

"With the exception of the reason for why we were created, we are a success story," says Public Information Chief Chartier. A poster of sunny Paris on one wall of his office balances a sequence of black-and-white photos depicting a street battle on the opposite side. "Of course we'd all rather be elsewhere, rather there was no need for it, rather people weren't murdered, raped and tortured. But since we have to be here, we are glad to have the best people we can, glad to be doing it," he says.

Blewitt and Chartier both say that the biggest changes in the Tribunal's last five years are that things have become somewhat routine, that in some ways the place has begun to run itself. The organization just has to respond to problems as they come up, points out Blewitt. "I think Kosovo was a good test of how well we perform," he says.

Despite having its procedures and staff in place, and being able to handle the new problems that constantly crop up, the enduring pressure of its task remains. Christian Chartier sums up the feeling of many ICTY staff when he says, "I feel personally, very deeply, that we are the Tribunal *for* Yugoslavia. It's important that people there see justice done while they are living, if it is to help them restart life, begin healing. So the challenge of time is always with us." CIO

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Features Editor Sandy Kendall wants to hear from you at *skendall@cio.com*.

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*Edited by Sari Kalin. Send comments and ideas for future columns to* et@cio.com.

ILLUSTRATION BY STEVE MUNDAY

# Getting to Know You

*Automatic e-mail profiles help connect the dots for knowledge management*

**BY JOHN WEBSTER**

A PROJECT MANAGER needs to know the cost of lead pipe in Bangladesh. He's surfing the web, making calls, shooting off e-mails and faxes. Meanwhile, unbeknownst to A, B—the assistant vice president of logistics—has been pricing pipe via an e-mail conversation with a Bangladeshi supplier. Now, how does A find B?

Too often, he doesn't. But maybe A gets lucky and bumps into B at the proverbial water cooler (if A and B work in the same office), and they start chatting about the local team being a lead-pipe cinch to win the pennant and...That

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reminds me, says A, I'm going nuts trying to find the price for lead pipe in Bangladesh.

Not too likely, is it? But maybe there's a way to make A aware of B, or C or D or whoever is knowledgeable about the cost of lead pipe on the Indian subcontinent.

In fact, there is. It's called e-mail.

E-mail. Can't live with it; can't go back to smoke signals. As the dominant mode of communication in business today, e-mail can drive a company's success—or it can drive it crazy.

**People's knowledge is often expressed in their e-mail exchanges with colleagues.**

"Most people have a hard time dealing with the sheer number of e-mails they receive," says Andrew Mitchell, a research associate with London-based British Telecommunications E-Government Division. "We need solutions to store and summarize all this, and that will enable us to collaborate."

"I'm concerned that people don't know how to find what they need," says Mike Turillo, chief learning officer at KPMG International in Boston. "And when they finally find it, they don't know how to use it. We spend a lot of our time just trying to manage it."

To manage e-mail more efficiently and productively, both Mitchell and Turillo are testing new web-based software: Mitchell is trying out his own company's Knowledge Sharing Environment (KSE); at KPMG, Turillo is using Los Angeles-based Tacit Knowledge Systems KnowledgeMail. In addition to helping people manage their e-mail, the software tracks a user's work, alerts users to important information and even notifies them that someone else in the company is doing similar work. This way, the software brings people (like A and B) together to share information and solve problems.

KnowledgeMail and KSE share similar technology, vernacular and features. KSE in particular can be traced directly to Yenta, software agent technology developed by Lenny Foner, a doctoral student at Massachusetts Institute of Technology in Cambridge, Mass.

"Yenta can find people in the same organization," Foner says, "perhaps only a few offices away from each other, who should have known that they're working on similar projects or with similar tools but didn't because it never occurred to either party to mention it to the other."

Foner sees great business potential for his research, and so do British Telecom IT executives. In fact, the company based some of KSE's technology on publicly available Yenta code. According to John Davies, British Telecom's manager of knowledge management research, "a company's monetary value is increasingly dependent and attributable to the collective knowledge of its employees." In other words, knowledge is not only power, it's profits. And how much company knowledge is actually stored in a database? Compared with the knowledge stored in people, not much. And people's knowledge is often expressed in their e-mail exchanges with colleagues.

## E-Mail Overload

No one has to tell a CIO that there's too much e-mail flying across the network and that e-mail storage and software maintenance cost money. People also spend a good chunk of company time reading, sending and sorting through e-mail.

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## An Open Window on the Web

In an effort to interlace internet applications with Windows applications, **IBM** has created a technology called **Sash** that enables developers to use web development tools to create internet applications that seamlessly integrate with the desktop environment. (IBM has dubbed these "weblications," but we'll try not to hold that against them.) According to IBM, IT managers can more simply manage, update and distribute these programs to employees while maintaining the familiar layout of the Windows interface—essentially breaking the barrier that exists between the desktop operating environment and the web browser.

As a layer added to the Windows operating system, Sash enables mapping of both the application programming interface (API) and the graphical user interface (GUI) in the development of programs used to create web applications. Utilizing existing webpage scripting and layout skills, tools and technologies, developers can use Javascript, XML, DHTML and HTML to build an internet program that functions just like their Windows desktop applications. The Sash Weblication Manager enables developers to design programs that feature all the interface functionality end users expect, as well as to ease desktop integration, quick network installation and the

Tacit's KnowledgeMail sorts through this mess using a typical four-tier architecture: The server application sits on a web server and users access it via their web browsers. An underlying relational database contains user profile information, which determines topics of interest to particular users and how that information will be distributed to others. User profiles contain keywords and phrases that help people identify important e-mail. A feature called KnowledgeSweep uses keywords to help the software find people who can contribute knowledge to a company project or strategy, even if they're not directly involved.

**KnowledgeMail adds keywords and phrases to a profile based on the user's own e-mails.**

At a minimum, KnowledgeMail acts as an information filter. Users can create their own interest profiles by placing keywords into their central repository file. For example, a user in systems administration might start her user profile with the terms *database*, *object-oriented* and *firewall*. The keywords enable KnowledgeMail to flag incoming e-mails that contain those words. Thus, when she arrives at her desk in the morning, she doesn't have to sift through 50 e-mails; she can go directly to the flagged e-mails and get right to work.

What's more, the software adds keywords and phrases to a profile based on the user's own e-mails as well as frequently viewed HTML documents. The software does this by picking out words or phrases that commonly occur in a user's e-mails and webpage hits. This passive user profile construction is central to both KnowledgeMail and KSE. Says Tacit founder and CEO David Gilmour: "Software should be like a smart listening device. We can take a bird's eye view and see all the problems going on and identify patterns."

Take the systems administrator example again. If she discusses a C++ compiler in 10 e-mails over several days, KnowledgeMail will add the term *C++ compiler* to her profile. Keywords and phrases are chosen by the software based not only on frequency but on context and "significance patterns," or the relative importance of the text surrounding a specific word or phrase. The user can also tell the software not to put certain terms in her profile or to keep them private. User profiles are encrypted and secure.

KnowledgeMail and KSE also let users annotate documents they distribute to colleagues. If one user adds comments to a particular article that the software sends to five coworkers, each recipient also receives the comments. Similarly, website referrals and URLs can be embedded into distributed documents to expand the scope of information contained in an article.

KSE is now available to 3,000 users within British Telecom (the company plans to sell KSE to its corporate customers in the second quarter of 2000). Most of the company's KSE-based working communities contain 10 to 100 people. Davies says users "share knowledge and experience wherever they're located. People on the company organizational chart are often dispersed both geographically and organizationally, and KSE breaks both those barriers." He adds that the software is "neither network hun-

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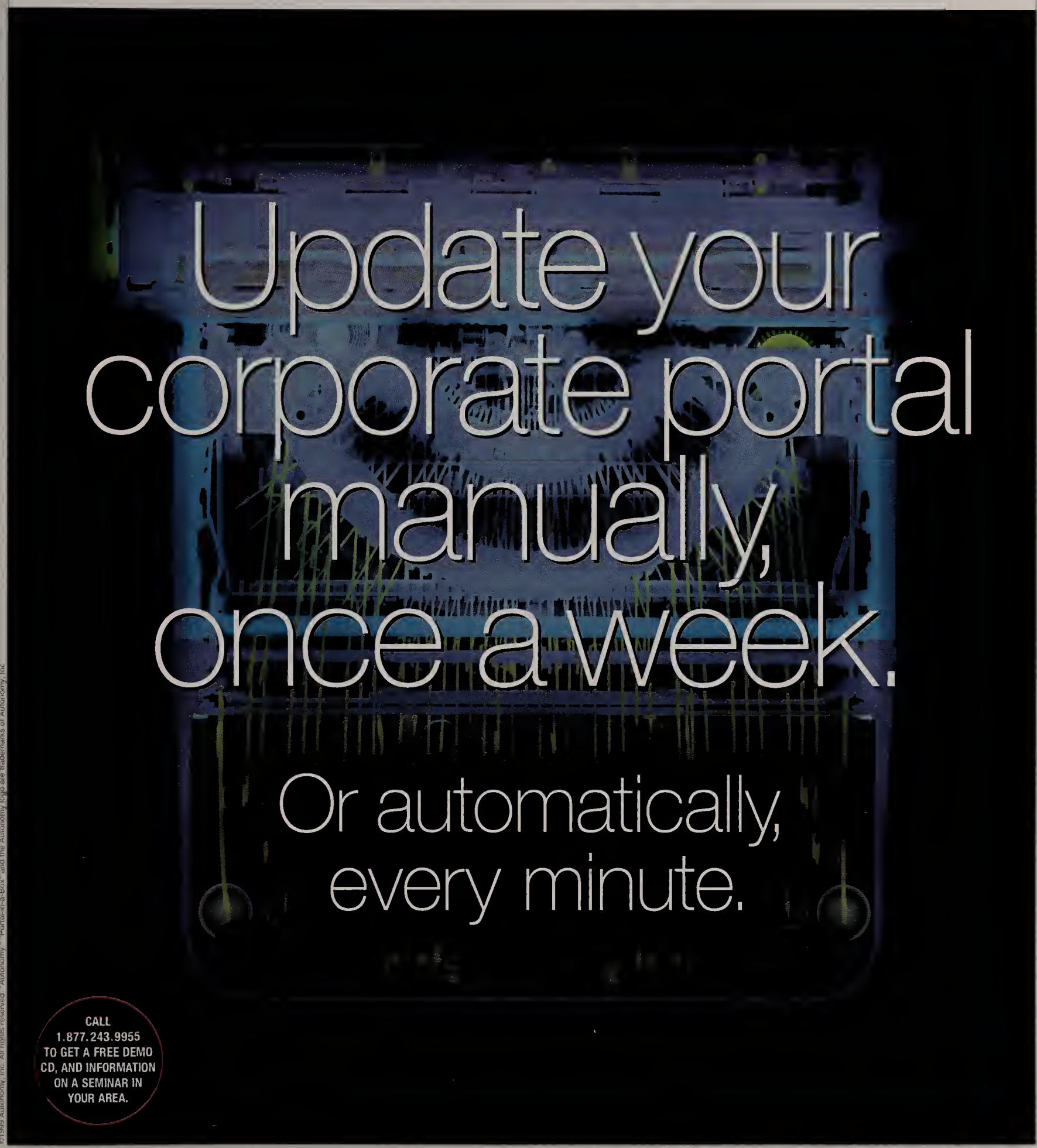
ability to work when the user is not connected to the network. The Sash development tool is available for download at *www.alphaworks.ibm.com* at no charge under the terms of IBM's alphaworks program. For more information, call Kristin Wahl, 415 545-4104.

## Got Mail?

Now that your company is on the web, have you been deluged with e-mail? Do you have to designate someone just to deal with it all? A new entry into the e-mail management space is **Telos Corp.'s Automated Message Handling System**, designed to provide contextual filtering, routing and searching. It takes messages sent to so-called generic e-mail addresses, such as *info@agency.gov* or *support@company.com* and lets companies filter and route them based on keywords or concepts within the message itself. In addition, you can search and retrieve messages even after they have been forwarded to multiple users' mailboxes. Running on Windows NT, AMHS costs $23,275. For more information, call Chris Cheek at 703 724-3800.

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gry nor computer-power hungry."

British Telecom's Mitchell participates in a 15-person collaborative research group, scattered about different buildings, formed to respond to a British government-authored white paper about modernizing its information technology. Mitchell uses KSE when, for example, a team member e-mails him a newspaper article URL. Based on his existing user profile, a graphical bar rates how interested Mitchell should be in the article. KSE's interface contains a one-line summary of the article, and with the click of an icon, Mitchell can see the entire text. If Mitchell clicks on a smiley-face icon, KSE will add keywords from the article to his user profile. If the article doesn't interest him, he clicks on a sad-face icon, which instructs KSE to disregard the article. In addition, he can click on a "users" icon and KSE will generate a list of potentially interested colleagues based on their user profiles. Mitchell can e-mail the article to his colleagues, along with annotations, and the article will automatically be added to the team's database.

"KSE allows us to do four things: capture, share, store and collaborate on important information," says Mitchell. "It's a great time-saver because you can shift that portion of your work to the software. It allows us to reduce unnecessary data and gives us only actionable information."

**Many users are loath to make personal information public, even if it's job-related.**

## Getting Over the User Hurdle

As large companies begin to establish pilot programs to take advantage of e-mail-based knowledge management, one hurdle is the user. Many users are loath to make personal information public, even if it's job-related. KnowledgeMail and KSE let them determine exactly what will be publicly accessible to others in the organization, but the issue of control lingers. To help users feel at ease with the new technology, KnowledgeMail can be integrated with existing software, such as Microsoft Outlook.

At Houston-based Texaco, for example, John Old, director of information technology, plans to link KnowledgeMail with in-house organizational tools familiar to many of his users. TeamSpace, for example, currently in beta at the company, is a Microsoft Outlook-based collaborative work environment that is the virtual version of a team strategy room. Project participants meet in Texaco's team rooms to view and discuss pertinent project-related documents and other material. KnowledgeMail can run in a Microsoft Exchange environment and use Outlook's integrated browser to let the project members collaborate in a virtual room.

"We use Microsoft Exchange and Outlook as a common e-mail environment all over the world, so it's the natural way people communicate at Texaco," says Old. "KnowledgeMail runs in the Exchange environment because that's what most people are comfortable with. It helps people connect, even if they don't know what they're looking for. This is different from a company yellow-pages application, which requires explicit input and is static information. We put KnowledgeMail in place because the way users view things they're interested in becomes dynamic."

KPMG is also experimenting with KnowledgeMail. More than 2,000 consultants and analysts use the system. Turillo

# new products

## Here's Looking At You...and You and You

The problem with videoconferencing is that it requires dedicated high-end devices in multiple locations, and a network to support them. **White Pine Software** has taken its experience with internet-based conferencing and built **CU-SeeMe Web**, a product for communicating live multipoint video, audio and text over the web. The company envisions the product being used for on-demand visual instant messaging, video chatting, live interactive web events and face-to-face, online call centers for e-commerce and other support services.

CU-SeeMe Web software allows developers to embed audio, video, text chat and conference control features into a website. The developer can customize not only the design but also the destination of the CU-SeeMe Web connection (to a single person, multiple people or a chat site). The software integrates with White Pine's current MeetingPoint conference server software for certain back-end functions. The price for a CU-SeeMe Cam Kit is $99; the software is $69. MeetingPoint Conferencing software will run you $8,995. For more information, call Tanya Prather at 603 886-9050.

# Does Your IT Environment Have Room to Grow?

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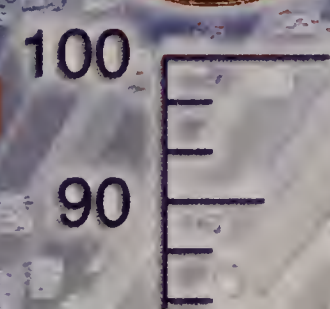


says it should not only be a time-saver, it should encourage contribution to the organization. "There's a natural human impediment for us to contribute. We will go after something only if we need it. But I want to make it easier for people to contribute to the group by filtering information they don't need. With KnowledgeMail, the software is also doing the contributing for them." ■

UPDATE
application servers

# Who Will Be Served?

WHEN WE TACKLED application servers last year, we cited a half-dozen or so companies working to help CIOs provide easy access through the web to databases and other legacy information. Now there are over two dozen. With the browser as the user interface, the application development challenge is eased because your IT department doesn't have to worry about the interface on the desktop. The burden has shifted though. As most CIOs now know, it's become an integration challenge.

According to Ovum Inc., the worldwide market for application servers and services will be $17 billion in 2004 (compared with $251 million last year). There's a website that tracks all these vendors in a handy matrix. Visit *www.flashline.com/components/appservermatrix.jsp* for a comparison of products, platforms and price. The latter shows a wide range, from Bullsoft's free open-source software to $35,000 per CPU for IBM WebSphere's Enterprise Edition and iPlanet (the Sun-Netscape alliance). Inexplicably, Sun's own NetDynamics product, which runs on twice as many operating systems as iPlanet's, is only $25,000 per CPU. In addition, more than half of the vendors on the site let you either download their software or get a demo copy.

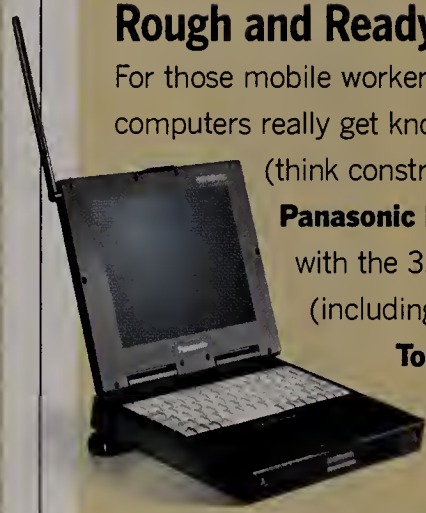
Flashline.com, an online marketer of software components, hosts the site, and is considering building more matrices. Though none have been scheduled, Flashline.com spokesperson Marti Bowman says Enterprise JavaBeans are at the top of the list. (For more on EJB, see "The Latest in Designer Beans," *CIO*, Jan. 15, 2000.)

A Flashline.com staff person works almost full-time to ensure that the application server matrix is up-to-date. While some vendors are happy to supply information, others—especially those whose information might not compare favorably—force the company to do some digging. According to Bowman, it's updated at least weekly.

*–Howard Baldwin*

# new products

## Rough and Ready



For those mobile workers whose computers really get knocked around (think construction sites), **Panasonic** has come up with the 3.8-pound (including battery) **Toughbook 17** and the **Toughbook 34**, the first ruggedized Windows-based portable notebook PCs with integrated wireless communications solutions for Mobitex, DataTAC, CDPD networks. The 300MHz notebooks are built with magnesium cases to withstand shock, dust and vibration, and they're even water resistant.

They incorporate 4.3GB hard drives, 64MB of RAM (expandable to 160MB), an onboard USB port, Type II PC Card slot, and headphone and microphone jacks. The 8.4-inch TFT color screen has touch capabilities and 800-by-600 SVGA resolution. The difference between the two is cosmetic: the Toughbook 17 is black with an aluminum handle (for field use including telecom, utilities, field service, military and public safety), while the Toughbook 34 is silver and gray (for field sales forces, distribution, insurance and other business users). Both are currently priced at $3,599. For more information, call 800 662-3537.

ILLUSTRATION BY MARK FISHER

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CAPITAL IDEAS
supply chain ventures

# Looking Out for the Little Guy

WHAT'S HOT Internet-related services focused on supporting the nation's 2 million small businesses are hot right now. Small businesses are moving on to the web in large numbers, hoping to spur sales and expand services while lowering costs. To feed this trend, Freeworks.com is providing free e-mail-based business services such as expense tracking and invoicing. Small businesses (or departments within larger companies) access these services through their browser from a portal site. All Bases Covered, is leading the way in becoming a national provider of system integration services to small businesses. The company helps small businesses gain high-speed internet access and network computers internally. (Red Rock has an interest in both of these companies.)

WHAT'S NOT With some exceptions, companies selling traditional license-based enterprise software designed to fix inefficient internal processes are not hot for venture capital investment. This area is perceived as mature, dominated by large companies and overripe for new investment. Savvy entrepreneurs sense this and are altering business plans to make them more attractive. To accomplish this, they either sell their software and services through an ASP (application service provider) model, providing remote hosting and rental, or offer solutions that enable companies to buy goods and services from each other over the internet. Currently there appears to be greater opportunity for companies selling externally focused software and services than software that focuses on solving internal corporate problems.

WHAT'S MISSING New companies are not creating truly differentiated internet service offerings. We are seeing a number of "me too" companies struggling to explain how they are different from a half-dozen competitors. With the wide availability of venture funding and low barriers to entry, entrepreneurs less frequently come up with value propositions that are truly different. Instead, multiple companies focus on a single niche and slug it out, burning up sizable amounts of venture capital and selling their products or services for a net loss in order to gain market share. Sadly, it is typical for only a few of the competitors to reap the majority of rewards.

One new product that would be inter-

esting to see is downloadable client software for improving the business-to-business e-commerce experience. For instance, if a company intends to purchase surplus furniture through an online auction, the buyer may require more information than that provided by the auction. In that case, software allowing real-time discussion with the seller would facilitate the transaction and ultimately seal the deal.

The guest columnist for this installment of Capital Ideas is Peter Dumanian, general partner of Red Rock Ventures in Palo Alto, Calif.

PREDICTIONS
eBusiness

# Ka-Ching!

THE INTERNET may not change everything, but it's affecting more than a few balance sheets.

International Data Corp. (a sister company to CIO Communications) predicts that not only will the revenue from transactions conducted over the internet surpass $1 trillion by next year, but in 2003 it will almost triple again to $2.8 trillion. Pretty good for something the Defense Department devised 31 years ago to bolster communications in case of a nuclear attack on Washington, D.C.

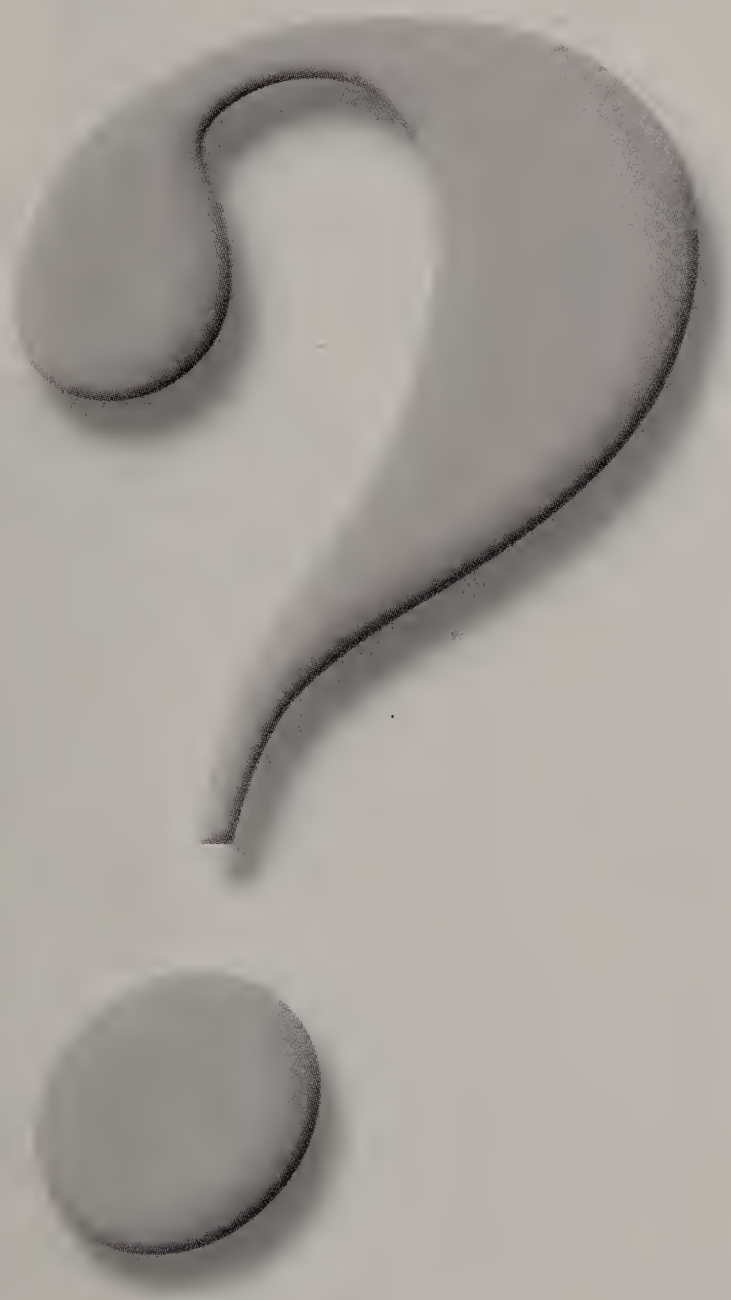
The dollars are no longer buying technology; they're going toward marketing, sales and content creation, according to Anna Giraldo Kerr, senior analyst for IDC's Internet and eCommerce Strategies research program.

An interesting statistic: For every dollar of e-commerce revenue generated in 1998, 93 cents were directly invested in the internet commerce infrastructure. IDC expects corporations to increase their investments significantly to improve this ratio by 2003.

And this year, IDC expects nontechnology investments to surpass technology investments. By 2003, technology investments' share will have decreased to 39 percent.

ILLUSTRATION BY MARK FISHER

How will your IT staff support
the increasing amount of enterprise
technology within your organization?



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# Opinion

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## CIO Confidential

Only the Names Have Been Changed

ILLUSTRATION BY VAL MINA

# The Boiler Room Rag

BY ANONYMOUS

**I'M TWO WEEKS ON THE ROAD NOW,** all overseas, continually heading east for meetings in Europe, then on to Asia, Australia, Japan, then home. I've learned that the secret to dealing with jet lag is simply to decide ahead of time that you're going to feel lousy every single minute you're gone and for several days after you get back. This doesn't make you feel any better, but it somehow lessens your urge to throw yourself in front of the bullet train. I'm on my last leg home, a domestic hop, and the guy in front of me almost broke the LCD panel on my laptop when he leaned back. Why can't I take my eyes off his hair plugs?

What awaits me back at the office is a month's worth of phone calls and a mountain of periodicals I'll never get around to reading holding down an even bigger stack of urgent junk mail. I'm so looking forward to it.

The worst of the lot will be the trade magazines that my boss has been good enough to forward to my attention. Really, with the possible exception of a user with an uncle in the software business, there's nothing more dangerous than a CEO with a copy of an information technology magazine like the one

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you're holding right now. In a CEO's hands, it's a smart bomb that lands on your desk with a Post-it note attached to one or more of the articles, each scrawled with the same five dreaded words: "Why aren't we doing this?"

Over the years, a million glib and intemperate answers to this question have popped into my head, and only a superhuman effort of self-control has kept me from succumbing to the temptation to slap a Post-it Note on his ample forehead reading:

**Perhaps we CIOs could convince our favorite publications to print their articles in a code that could only be deciphered with the help of a Captain Bitmap Decoder Ring. (Don't bother denying that you have one.)**

"We would, but I'm too busy down here in the boiler room making this nickel scream!"

I guess I'll wait and make that my last official act. Perhaps we CIOs could convince our favorite publications to print their articles in a code that could be deciphered only with the help of a Captain Bitmap Decoder Ring. (Don't bother denying that you have one.)

The problem with a question like, "Why aren't we doing this?" is that while there may be a thousand answers, there are few good reasons. For most organizations, the answers eventually boil down to anemic budgets and a failure to build organizational capability and readiness while competing with internet startups to recruit technology talent ("Hey, kid, we're hip! Honest!").

The most interesting and vexing problem with information technology budgets is how disconnected the entire process of setting and scrutinizing spending has become. If your budget is like mine, 80 percent of it goes to keeping the lights on and implementing small system enhancements, and the other 20 percent goes to new development and major enhancements. However, over the course of the entire year, the 80 percent that goes to sustaining systems gets only 20 percent of the users' attention, and the 20 percent in new development gets 80 percent of the scrutiny (translation: whining and nit-picking). Now, you might say that the reason the 20 percent gets the attention is because that's the portion of the budget that is discretionary. But is it?

What would happen to us and our companies if we could reverse this particular universe. Let's say, for example, we could get our management to fixate on the "keep the lights on" portion of our budgets and allow us to spend as much money as we wanted on new development and enhancements, provided we stayed within the boundaries of diminishing returns (remembering that nine women will not produce one baby in a month). Now, you may feel the need to wear a safety helmet and goggles when you explain this to the executive committee, but consider the following:

Every new development project we've got either in progress or on the drawing board returns benefits well in excess of the investment. A recent accounting pronouncement known as SOP 98-1 requires many companies to capitalize the internal and external costs associated with the development and deployment of software for internal use. This change means that the costs associated with development do not hit the books as an expense while the development is going on. Instead, the project costs are amortized over five or seven or perhaps even 10 years, starting when the software is actually put into use. When you couple that with the fact that the benefits on new projects cannot be realized until these systems go live, it follows that staffing these efforts for the shortest possible development times makes absolutely perfect sense.

Perhaps the best way to frame this argument is to say that as we make the move from a service economy to an experience economy (see Disney World), competitive differentiation between companies will come from the innovative use of information technology. Going to the McDonald's of software companies for payroll or general ledger software will be fine, but developing creative, capable expertise in those things that might set our companies apart from the rest of the pack, like e-commerce, will certainly be the difference between success and...*that other thing*.

As we struggle to compete on a truly global basis, the need for this kind of risk taking has never been greater. Yet it's hard to imagine that more than just a handful of established companies will actually make this kind of commitment. In most businesses, there's never been much patience for mistakes, and as things get more demanding, running faster and faster, that impatience could eventually turn to contempt. If your organization makes the conscious decision to minimize risk—to let somebody else innovate, take the risks, suffer the inevitable setbacks—then you'd better hope that that somebody else isn't your competition, and you'd better be comfortable with a solution or a process that everyone else in your industry will have access to.

Investing in this capability requires devoting a sufficient amount of cash and being able to recruit the necessary talent. Even more important than recruiting every smart, creative, funny-looking propeller-head you can lay your hands on is retaining every smart, creative, funny-looking propeller-head you've already got. Your ability to do both hinges on being able to offer training, great working conditions, challenging projects and, while you're at it, changing your company's name to *something something dotcom.*

The very worst part is that this budgeting game has a way of taking on a life of its own. In fact, it consumes far more management time and attention (meetings, spreadsheets, presentations, coffee) than it could ever return in benefits to our shareholders. Tracking spending is important. Making sure that you are investing effectively is important. Grilling managers that might otherwise be delivering great systems and churning out pages of spreadsheets is a waste.

Imagine what we might all do, what we might all contribute to our organizations, if we had adequate budgets and productive, stable teams. This is not a circumstance that many of us have ever experienced. Surely the realization of this possibility could induce temporary disorientation for even the most stout-hearted.

Imagine. Visualize. Got it?

**Even more important than recruiting every smart, creative, funny-looking propeller-head you can lay your hands on is retaining every smart, creative, funny-looking propeller-head you've got.**

Good. Now run down to your CEO's office and try out these arguments. I'll be easy to find when you get back. I'll be in the boiler room puttin' the hurt on Thomas Jefferson. CIO

---

Anonymous has been a CIO at household-name companies for over a dozen years. Commiserate with him at *confidential@cio.com.*

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# Should CIOs Value IT Certification?

CLIFF BROZO
PROFESSOR OF COMPUTER SCIENCE
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*no*

**Certification. Tests. Ugh.**

The last thing IT professionals need is some governing body telling them what they should know. In a corporate environment where stress, deadlines and creativity are part of the job, programmers need certification before writing a program about as much as a dog needs to know how to put out fires before using a fire hydrant.

Certification tests mean nothing when it comes to getting a job done, because at least half of programming involves understanding the business of the company, not understanding the intricacies of multiple choice questions. What skill set is necessary to become successful?

Today's employees need to be flexible in terms of what they know and what they can learn. If someone decides that the model programmer needs to know C++, Java, Visual Basic and SQL, how does that help when the next hot language comes along? Should we require recertification every five years? Every three years? Every 18 months? Where do we draw the line? How can IT professionals find the time to study for these tests? Are employers going to grant a study hour and, while we're at it, why not have a certification in test taking as well?

What certification means is that you studied from a book, or went on to an internet brain-dump page, to cram enough knowledge into your short-term memory (yes, humans *do* have RAM) so that you can answer a bunch of silly questions. If I score a 95 on a multiple-choice exam, does that mean I can write a C++ program? Certainly not. All it means is that I can answer questions about it. That's why corporations assign big IS projects to people with experience, not students right out of college who have passed a bunch of tests. Experience is what matters most today, and not the experience of taking a test. ■

KEWAL DHARIWAL
INSTITUTE FOR CERTIFICATION OF COMPUTING PROFESSIONALS
DES PLAINES, ILL.

*yes*

**Want good workers? Make sure they know their stuff.**

It's no secret that many CIOs and IS employees question the advantages of IT certification. But if you look closely at the issues, you'll see that benefits come in two important guises: project efficiency and legal protection.

Today many contracts require specific skills from the employees who are going to be assigned to work on a particular project. These requirements are specified in the RFP. Names, résumés and certifications are a fundamental part of that equation. People who have been objectively tested by external agencies are proud of reaching a difficult universal standard and proud to be part of the projects.

IS employees who have demonstrated their knowledge and skills through certification have been found to solve problems much faster, work better in teams and show a higher level of confidence in their own abilities and solutions than those who haven't. The result? Greater confidence from the customers, both internal and external. And another benefit comes in the bottom line. Ultimately, better solutions and employees with greater confidence lower costs by simplifying processes and relationships. If fewer people are required for projects, that reduces project complexity, which further reduces costs.

Let's face it. Most IT projects suffer from technology challenges, inadequate cost estimation, complexity introduced by team size, inappropriate systems development processes and poor risk-assessment techniques. Any one of these factors can lead to delayed or incomplete projects and cost overruns. Any one of these situations can also bring litigation against your company. If you can prove that you have sound methods in place for measuring your employees' skills and the quality of their work, and if you have ensured that your people have external validation of their skills through nonprofit industry associations and that those employees have maintained the currency of their certification, you'll see the benefits for yourself. ■

*Edited by Meg Mitchell. Which side of the debate are you on? Visit* comment.cio.com *and make your thoughts known. Send column ideas to* faceoff@cio.com.

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# Dealing with Bad Situations

BY GARY BAXTER

ILLUSTRATION BY CELIA JOHNSON

**LET'S FACE IT, NOBODY LIKES TO SCREW UP.** If you're like me and have risen through the technical ranks, you have developed a strong aversion to admitting mistakes. Our natural reaction is to fix the blame on something or someone out of our control so as to keep our perfect reputation intact. Resist that tendency with all your might! As a senior executive, your job is not to fix blame but to handle a bad situation as a professional and to come out on the other side with your company and career better off. How you handle a bad situation is up to you, but this is the time for calm and calculated behavior, not unchecked emotional reactions.

When bad news is delivered, don't kill the messenger. If that's not possible, at least do it behind closed doors. To understand any bad situation, get some perspective. Public-speaking guru Dale Carnegie recommends these steps: Imagine the worst that can happen. Then ask yourself if you can live with that. Do what you can to prevent the worst from happening. For most of us, the worst that can happen is getting fired. Can we live with that? Of course we can.

Once you are aware that a bad situation exists, put on your company hat and take immediate action to mitigate the damage. Let your boss know right away that you have a situation and you will update him or her in an hour. Do not skip this step! Others in the company are aware of the situation. How would your boss react if he or she hears the news from one of your coworkers or customers?

By gathering facts (make no judgments or criticisms) and reporting them in a printed memo to the boss, you can delay the inevitable finger-pointing and the resulting damage to relationships and career longevity. Edit and revise this memo carefully as it will likely be the only hard evidence of your levelheadedness during the situation.

As you gather facts, be aware of your team's sensitivities. They know something ugly has happened and will likely be concerned for their own jobs. Be clear in your communications—you are gathering facts and not looking for someone

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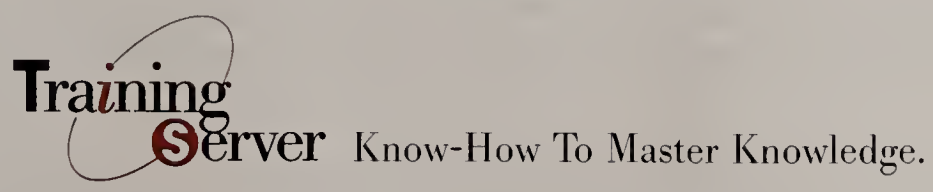


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to blame. Be cool and levelheaded. This is not easy when one of your direct reports admits to making a boneheaded mistake, but it is absolutely essential.

Opportunists exist in every organization, and they are easy to identify during a tough situation. They're the ones pointing fingers. Protect yourself and your team. Don't let these few bad apples upset your sound judgment.

When you know all the facts, create, communicate and execute a plan to fix the problem and ensure it will not happen again. Knowing about a problem and not acting to correct it is asking to be fired. While everyone is entitled to a few mistakes, making the same mistake twice is inexcusable.

Once the dust settles, reflect on your performance and that of your peers and boss. Were your peers supportive? Was your boss as professional as you were? Do you want to continue working with these people?

I love being a CIO and even take some perverse pleasure from coming out of a tough situation with my career intact. But that's only possible because of my company's culture—my boss and my peers are very supportive and even more professional than I am. We don't punish mistakes, because we recognize that mistakes are the byproduct of activity. And in IS, inactivity is the greatest mistake. CIO

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Gary Baxter is vice president and CIO at Maine Employers' Mutual Insurance Co. in Portland.

# Get on the Same Page

BY BRENT M. LONGNECKER

**WHEREVER YOU GO TODAY,** someone is talking about how out of whack the pay for IT professionals has become in recent years. Whether they're raging or sorrowing, they attack "ITers" as a "necessary evil" in today's corporate environment. They will oftentimes gleefully end such conversations by voicing their opinion (hope) that there will be a day of reckoning whereby the market for IT services will fall back in line with that of other corporate functional departments such as legal, human resources and finance.

And if this isn't problem enough for CIOs, consider their plight within their own companies. Daily they try to convince their superiors that they need to make investments not only in technology but in good people to manage that technology. In response, CIOs are often encouraged to tap the services of employees who happen to be "good with computers." This battle—which is waged every day across the United States—can position a CIO as the number-one participant of a company's employee assistance program.

For many businesses, the decision to hire in-house techies is not nearly as easy as it appears, nor is it typically as easy as functional counterparts in other corporate departments have it. In today's tight market, it's difficult to procure IT talent. That difficulty is compounded by the fact that many executives don't have a clue about IT. Hence, explaining the need to hire in-house staff is often a surefire way to make the higher-ups feel inadequate real quick. And CIOs know, making the higher-ups feel inadequate is not a very good thing to do.

But one thing is certain: Without a sound systems infrastructure in place, a company is guaranteed to fail in today's competitive market. Therefore, all parties need to put their misunderstandings aside and begin working together toward a common goal—for example: to understand and appreciate the strategic role of IT and to utilize it in the company's overall quest to achieve its business goals and maximize shareholder value creation.

For sure, CEOs, COOs and anyone else a CIO reports to need to get past their feelings of inadequacy when it comes to IT if they ever want to succeed in creating shareholder value. However, CIOs haven't always done their part to help executives understand IT and the need to hire and compensate good people. CIOs must speak plain and understandable English to those around them who are intimidated by IT jargon. Start by communicating more effectively with—and educating—those to whom you are accountable. If executives and CIOs do their part to understand each other, it will be amazing how much more productive companies as a whole will become. And in the end, all parties end up winners. Last time I checked, winning was a lot more fun than the alternative. CIO

Do you have an opinion you would like to express? Let Senior Editor Megan Santosus know at *santosus@cio.com.*

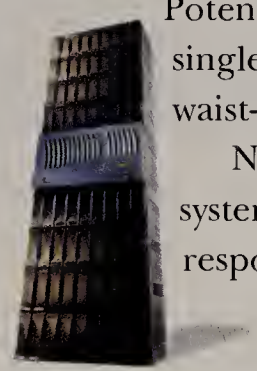
---

Brent M. Longnecker is executive vice president of Houston-based Resources Connection, a provider of human resources, finance, accounting and information technology professionals.

# Was it fear that drove 9 of the top 10 Internet companies to Network Appliance?

Call it fear. Call it prudence. Or just call it common sense.

Either way, one thing's sure. Those industry leaders know what happens when mission-critical data's unavailable. Revenues stop. Potential customers vanish. Reputations sour. In short, a single—even brief—data outage can plunge any of them waist-deep into one very ugly situation.



Now, a little logic. Surely, you don't need more system complexity, more potential problems. So a sensible response to the data-outage threat should be as simple, reliable and easily managed as—well, an appliance. Which is exactly what drew those companies to Network Appliance™ storage and Internet caching solutions. That, and 99.99+% uptime. Plus the speed they add to data delivery. Not to mention the ability to recover lost or corrupted data in minutes instead of hours or days.

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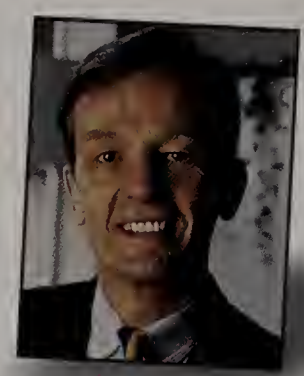
# The Great Untethered



Gary J. Beach

**THE MOST UBIQUITOUS WORD** in the mission statements of major vendors is *any*. As in, their product operates on any platform, on any device or at any time.

As our industry enters an age where customers control the relationship, the enabling technology driving the "any" evolution is clearly wireless. "Information at your hip" is becoming the market's battle cry. In a recent *CIO* study, wireless was the top rated "new" technology.

I recently had the opportunity to moderate a keynote panel of CIOs at Wireless IT, a trade show produced by the Cellular Telecommunications Industry Association (*www.ctia.org*), a trade group covering the wireless industry. Prepping for the panel, I was amazed at the plethora of terms, consortiums and protocols that drive this market and how much I did not know.

How much do you know about wireless technology? "More than my company's key competitor" is the only correct answer. I am convinced that corporations deploying wireless applications to serve employee, supply chain and external customers will win over those corporations that remain tethered strategically to wire.

Interested in learning more about wireless technology? Have you heard of Bluetooth (*www.bluetooth.net*)? Bluetooth is a wireless special-interest group founded in 1998 by Ericsson, IBM, Intel, Nokia and Toshiba. Twelve hundred other vendors have since joined the group. Bluetooth's mission is to define how computing and mobile telecommunication devices should transmit data to each other. By 2001, the group expects 80 percent of all mobile phones to be equipped with the $5 Bluetooth chip.

There's another wireless group you should bookmark. It is called the Wireless Application Protocol Forum (*www.wapforum.org*). WAP is focused on creating standards for wireless networked applications. Two hundred vendors and users have joined the effort.

What goes around comes around. Nearly a century after the worldwide buzz of Marconi's wireless transmission signal was received high on a hill above St. Johns, Newfoundland, wireless again is the market's rage.

I encourage all the readers of *CIO* to pay attention to wireless. It will be the standard of the near future.

I'd love to hear what you think of wireless. Let me know at *gbeach@cio.com*.

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Time Piece

# Volta's pi

**WHY DOES THE** Energizer Bunny keep going? Well, first of all, it doesn't. Everything in the universe, including you, me and the stars above, eventually goes kaput. That's entropy. But before that doleful death sentence is served, what keeps the rabbit running is the battery, which was born around 1800 when Alessandro Volta took disks of copper, zinc and cardboard soaked in salt water, stacked them in alternating layers and measured an electronic current coming off what he modestly called the Voltaic pile.

Today's batteries last longer, generate more energy and work the same way. A negatively charged anode and a positively charged cathode exchange electrons through an electrolyte. Eventually entropy steps in, electrochemical changes degrade the system and the battery dies. The car won't start; the flashlight flickers; the laptop winks off.

Commercial claims to the contrary, no one can predict how long a battery will last. When the day comes that we connect to the internet through our wristwatches and buy candy bars with our cell phones, we will still see some man on the street swearing at his pocket PC because Volta's battery—be it lithium-ion, nickel-cadmium or kryptonite—has just gone belly-up. It's nice to know that some things will never change. CIO

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